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ABSTRACT

The development of a model educational program in rehabilitative optometry is examined in terms of a statement of the scope of practice of the profession, analysis of existing educational programs in the field, and competency objectives to which the model educational program is directed. A survey of nine of the 13 institution members of the Association of Schools and Colleges of Optometry obtained detailed information concerning lectures, laboratories, and clinical experiences for the optometry curriculum. Seven established residency programs in rehabilitative optometry were also assessed in terms of educational content, clinical experience, the format of instruction, interdisciplinary experience, teaching responsibilities of the resident, and selection and followup of residents. Questionnaires were also administered to determine administrative policies and philosophies governing the rehabilitative optometry/low vision clinic, the low vision examination, and coverage given various subject areas in the curriculum. Part of the survey was designed to gain information concerning the extent to which students are trained in the areas of ocular pathology, genetics, and special diagnostic techniques such as electroretinography, electrooculography, and the visual evoked response, along with training in the psychology and sociology of the low vision patient: identification of low vision patients; and information about nonoptometric services. Competency objectives developed in conjunction with the model program are presented. Questionnaires and associated instructions and a bibliography are appended. (SW)

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HRP-0902743

Plan for Development of an Educational Program in Rehabilitative Optometry

Final Report

Submitted to:

Health Resources Administration
Department of Health and Human Services

Pursuant to:

Contract #HRA 232-79-0093

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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December 19, 1980

Association of Schools and Colleges of Optometry

HE013560

FINAL REPORT ON A PROJECT FOR DEVELOPMENT OF AN EDUCATIONAL PROGRAM IN REHABILITATIVE OPTOMETRY

Conducted By:
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1730 M Street, N.W.
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Washington, D.C. 20036
Under DHHS/HRA Contract #232-79-0093
Submitted: December 19, 1980

This report is made pursuant to Contract #HRA 232-79-0093. The amount charged to the Department of Health and Human Services for the work resulting in this report (inclusive of the amounts so charged for any prior reports submitted under this contract) is $126,341. The names of the persons employed by the Contractor with managerial or professional responsiblity for such work or for the content of the report are as follows:

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Acknowledgement

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TABLE OF CONTENTS

		PAGE
Introduction		i
I. Statement of Identification and Assessment of Existing Programs of Training in Rehabilitative Optometry		
	A. Collection of Data	1
	B. Existing Residencies in Rehabilitative Optometry	4
	C. The Undergraduate Curriculum in Rehabilitive Optometry	16
II. Statement of Competency Objectives and Their Relationship to the Practice of Rehabilitative Optometry		
	A. Definition of Rehabilitative Optometry	34
	B. Competency Objectives	34
	C. Discussion of Objectives, Practitioner Roles and Practice Settings	35
III. Appendices		
	A. Project Staff	38
	B. Advisory Committee	40
	C. Consultant Staff	42
	D. Instructions and Questionnaires Used to Collect Data on Existing Programs	44
	E. Low Vision Clinic Procedures Personnel	78
	F. Bibliography	88

INTRODUCTION

Under the terms of a contract with the Health Resources Administration (Contract #232-79-0093), the Association of Schools and Colleges of Optometry has developed a model educational program in rehabilitative optometry which is being provided to HRA as a separate submission.

In order to secure the information and data needed for preparation of the educational program, the Contractor developed a work plan designed to provide a logical progression from project beginning to completion of the product called for by the contract. In chronological sequence, the more important work milestones were:

1. Development of a statement of the scope of practice of rehabilitative optometry for the purposes of the contract;

2. Development of a data collection format and instructions for use in conducting the inventory of existing programs;

3. Conduct of a training session for faculty members selected to serve as data collectors to assure uniformity of approach and comparability of results;

4. Completion of the data collection and the analysis of the data and preparation of the inventory report;

5. Preparation of the competency objectives which the model educational plan will seek to achieve;

6. Development of the curriculum plan, topic outlines and the other elements of the educational plan.

As specified in the contract, a ten member Advisory Committee was established to provide professional advice and general guidance to the project. Various professional disciplines required in rehabilitative optometry and related patient services were represented in the membership of this committee which functioned to review, comment and make recommendations on plans and schedules and the various substantive materials developed during the course of the project. The Committee's contributions were made through three meetings held in Washington as well as by written comments and recommendations on substantive materials sent to them.

Through the entire project, but especially in connection with the activities referred to in numbers 1, 5, and 6 above, extensive use was made of discussions with and advice offered by consultants, the Advisory Committee and the HRA Project Officer, all of whom made substantial contributions to what the staff views as a successful outcome of the project.

The following Chapters and Appendices set forth in detail information concerning the definition of the scope of practice of rehabilitative optometry used in connection with this project, the inventory and analysis of existing programs in rehabilitative optometry and the competency objectives to which the model educational program is directed. The educational program itself is available, as earlier stated, in a separate document.

CHAPTER I - IDENTIFICATION AND ASSESSMENT OF EXISTING PROGRAMS OF TRAINING IN REHABILITATIVE OPTOMETRY

A-COLLECTION OF THE DATA

Curriculum data were gathered from nine of the thirteen schools and colleges of optometry (excluding newly-begun schools at Northeastern State University in Oklahoma and at University of Missouri, St. Louis) in the U.S. Since one of the primary goals was to survey all of the post-graduate residency programs with an emphasis in rehabilitative optometry, all of the schools and colleges which have residency programs were included in the survey.

Table 1:1 shows the schools and colleges of optometry which were surveyed and those which have residency programs with an emphasis in rehabilitative optometry.

TABLE 1:1

Existing Programs in Rehabilitative Optometry Surveyed

Schools/College of Optometry	Residency Program Title	Program Affiliate
University of Alabama	Low Vision Rehabilitation	- - - -
University of Houston	- - - -	- - - -
Illinois College of Optometry	Rehabilitative Optometry	Vet. Admin. M.C. Kansas City, MO
Indiana University	- - - -	- - - -
New England College of Optometry	Rehabilitative Optometry Hospital-Based Optometry	Vet. Admin. O.P. Clinic Boston, MA
The Ohio State University	Hospital-Based Optometry*	Vet. Admin. Hosp. Chillicothe, OH
Pennsylvania College of Optometry	Rehabilitative Optometry	- - - -
Southern California College of Optometry	Rehabilitative Optometry	Vet. Admin. O.P. Clinic Los Angeles, CA
State University of New York	Rehabilitative Optometry	Vet. Admin. M.C. Northport, NY

* Included in survey to indicate extent of rehabilitative optometry training in typical Hospital-Based Optometry residency program.

Selection of Data Collectors

Each of the Deans or Presidents of the selected schools and colleges of optometry was notified of his school's inclusion in the survey, and he was asked to appoint an individual from his school to be data collector for the school. All of the data collectors were faculty members who have special interest and background in rehabilitative optometry or curriculum development.

The Questionnaires

All questionnaires* were designed by the Information Group Director. Outlines for data requirements were prepared from discussions with the Advisory Committee. All questions were written by the Information Group Director and submitted to the Advisory Committee for comment. Revised questions were incorporated into the second draft of the questionnaires.

The forms were sent to the nine data collectors prior to a training meeting (described below). Some changes in the wording of the questions were made at the training meeting based on suggestions by the data collectors.

Five questionnaires were developed, together with instructions for their administration, to obtain detailed information concerning lectures, laboratories, and clinical experiences which contribute to the optometric education in rehabilitative optometry. Information was gathered concerning the optometry curriculum and the residency curriculum (if present). Below is a list of the five questionnaires together with the purpose of each and the individual(s) to whom each was addressed.

1. Overview of Optometry Curriculum in Rehabilitative Optometry.

Purpose:

To extract the basic curriculum design in rehabilitative optometry and the philosophy behind the design, without considering the residency program (if one exists).

Addressees:

Head of the curriculum committee or the head of the academic department or division which includes rehabilitative optometry.

2. Course Data Related to Rehabilitative Optometry.

Purpose:

To gather information from all courses and laboratories which may contribute directly to education in rehabilitative optometry. The questionnaire was divided into 9 sections covering different academic areas such as optics, ocular pathology, etc. It was devised so that if a section did not apply to a particular course, that section was skipped and the next considered. Since a course may cover some information in more than one section the instructor was given opportunity to respond to all section headings.

Addressees:

Instructor(s) of every course in the optometric curriculum that even remotely could have input in any of the topic areas. Only

*Appendix D

after all topic headings raised negative responses was a course which was potentially applicable eliminated. The questionnaire was also presented to every instructor of courses in the residency program in rehabilitative optometry.

3. Low Vision Clinic Administrative Policies and Data.

Purpose:
To gather information regarding the basic administrative policies and philosophies governing the rehabilitative optometry/low vision clinic.

Addressees:
Director or Chief of the Low Vision Clinic.

4. Low Vision Examination

Purpose:
To gather information about the nature of the low vision evaluation performed in the Low Vision Clinic. The questions differentiated between the role of the optometry student and resident (if applicable) in the clinic so information was gathered about both programs.

Addressees:
Director or Chief of the Low Vision Clinic.

5. Residency in Rehabilitative Optometry

Purpose:
To collect administrative, statistical, and philosophical data describing the residency program.

Previous questionnaires investigated the lecture and clinical background which a resident in rehabilitative optometry receives.

Addressees:
Coordinator of the Residency Program in Rehabilitative Optometry.

Training Meeting

The data collectors met together for a one-day training session in Columbus, Ohio, on January 14, 1980. All but one of the data collectors attended; the absentee was instructed by telephone.

The meeting was designed to assure that all data collectors understood the wording and meaning of the questions and that instructions for administering the questionnaire were fully and uniformly understood. Each question was discussed and occasional changes were made to clarify a question at the suggestion of the data collectors.

Collecting the Data

Following the training meeting, the data collectors spent four weeks using the questionnaires to gather information relative to their institution's program in rehabilitative optometry. They sought out and interviewed all faculty members teaching courses in which the material applied to rehabilitative optometry, the director of the low vision clinic, the person in

charge of the residency program and others to survey the entire program. When he had gathered information from all areas and completed all the questionnaires, each data collector mailed the completed set of questionnaires to the Information Group Director. The Information Group Director, during the analysis of the questionnaires, called data collectors when necessary to clarify responses or to secure more complete responses.

B - EXISTING RESIDENCIES IN REHABILITATIVE OPTOMETRY

As shown in Table 1:1, there are seven established residency programs which were identified and included in this analysis. Five of the seven are titled "Rehabilitative Optometry" residencies although, these residencies vary in their emphasis on low vision care. One of the remaining two residencies listed, that of New England College of Optometry/Westhaven Veteran's Administration Hospital, is intended to be 50% rehabilitative optometry and 50% hospital-based optometry.

As Table 1:1 indicates, most of the rehabilitative optometry residencies are affiliated with Veterans Administration medical centers, hospitals, or outpatients clinics. Many of the optometry schools and colleges offer residencies entitled "Hospital-Based Optometry" in conjunction with V.A. facilities. The New England College of Optometry has such residencies at the Newington and West Roxbury VA Hospitals. A hospital-based optometry residency is located at the VA facility in Lexington, Kentucky. The Illinois College of Optometry has one at the Kansas City V.A. Medical Center in addition to the rehabilitative optometry residency at the same location.

Hospital-based optometry residencies generally provide experience in low vision. Since low vision care is a very limited part of these residencies, most of the hospital-based optometry residencies were not included in this survey. However, to indicate the amount of low vision experience provided in a typical hospital-based optometry residency program, the survey collected data from the OSU/Chillicothe V.A. residency as an example.

The rehabilitative optometry residency and hospital-based optometry residency at the Kansas City Veteran's Administration Medical Center became separate residencies in 1979. They were previously part of a single residency which was begun in 1975 under the title hospital-based optometry.

Five of the seven residencies analyzed are affiliated with Veteran's Administration facilities. Two of the residencies, those at the Pennsylvania College of Optometry and at the University of Alabama, Birmingham School of Optometry, are not affiliated with any facility other than a school or college of optometry.

Questionning of the Advisory Committee, the data collectors, and others knowledgeable in rehabilitative optometry indicated that there are no known residencies in rehabilitative optometry currently other than those listed in Table 1:1. The New England College of Optometry is scheduled to begin a rehabilitative optometry residency with the V.A. Hospital in Westhaven, Connecticut in July, 1980. Because the residency was only in the planning stages when the survey was conducted, the preliminary data was not included in this analysis.

Educational Objectives

The detail of the responses to questions concerning the educational objectives of the residency programs varied greatly from program to program.

The objectives of each of the residencies are summarized in Table 2:1. Generally, the residencies affiliated with Veteran's Administration Hospitals/Clinics have written, specified objectives, while it seems the two non-affiliated residencies do not have objectives as clearly outlined.

However, from the nature of the programs as described elsewhere in the questionnaire, it appears that the unwritten objectives of the non-affiliated residencies, which are implied, relate more closely and directly to the area of rehabilitative optometry, as defined for this project, than do the objectives of the affiliated residencies. The affiliated residencies seem to place more emphasis on aiming to improve the resident's skills in the areas of primary optometric care and ocular pathology than do the unaffiliated residencies.

TABLE 2:1

Objectives of the Residency Programs

Institution/Affiliate

University of Alabama

1. To provide an excellent, clinically oriented program to prepare clinicians for careers in rehabilitative optometry service or clinical teaching.

Illinois College of Optometry/VAMC, Kansas City, MO

1. To provide training and experience to increase the resident's clinical skills in
   a) general optometric patient care
   b) care of the aphakic patient
   c) rehabilitative optometric care
   d) detection and diagnosis of ocular and related disease.

New England College of Optometry/VAOC, Boston, MA

1. To provide training in the care of the geriatric patient and rehabilitation of the visually impaired patient.

Ohio State University/VAMC, Chillicothe, OH

1. To improve the resident's proficiency in the use of specialized diagnostic techniques for detection of ocular disease and ocular signs of systemic disease.

2. To improve the resident's competence in the care of low-vision patients, aphakic patients, and geriatric patients.

3. To develop the resident's ability to function as a member of health-care team through participation in a multi-disciplinary health-delivery system.

Pennsylvania College of Optometry

1. To develop clinical expertise in the management of the low vision patient.

2. To develop the resident's skills and understanding of functioning in a multidisciplinary setting.

3. To involve the resident in teaching and research pertaining to low vision.

Southern California College of Optometry/VAOC, Los Angeles, CA

1. To improve the resident's proficiency and competency in the care of low vision patients through management of a wide variety of cases.

2. To develop experience and proficiency of the resident in managing low vision patients whose visual loss emanates from various ocular and systemic disease processes.

3. To develop the resident's understanding of the psycho-social problems of visually limited or impaired persons.

4. To develop the resident's understanding of the roles of medicine, optometry, psychology and education, and to learn to work with all disciplines contributing to the rehabilitation of partially sighted and blind patients.

5. To develop the resident's ability to function as a member of the health care team through participation in a multidisciplinary health delivery system.

6. To develop the resident's ability to recognize ocular disease and systemic disease manifested in the visual system through appropriate interaction with experienced optometric and ophthalmological personnel.

7. To prepare optometrists for careers in the specialty service of low vision or clinical teaching.

State University of New York/VAMC, Northport, NY

1. To provide additional training and develop skills in the area of rehabilitative contact lenses.

   a) To provide experience in the follow through of aphakics including diagnosis, presurgical evaluation, postsurgical follow-up, contact lens evaluation, prescription, fitting, and training, and post-wear responsibility.

   b) To develop skills in the use of contact lenses in the care of patients with conditions such as corneal trauma, corneal and ocular disease.

2. To provide additional training and develop skills in the area of low vision.

   a) To teach the resident to integrate the physical and physiological aspects of the ocular mechanism with the holistic behavior of the severely visually impaired patient.

   b) To increase the resident's skills in providing the low vision patient with appropriate optical appliances, education and support.

3. To provide additional training in primary optometric care.

   a) To provide advanced didactic course work and specified clinical experience in the areas of primary rehabilitative optometric care.

   b) To interrelate this experience with the areas of low vision, contact lenses, orthoptic visual training, ophthalmology, nursing service and specialized care services for both in- and out-patients.

   c) To foster understanding and appreciation of the special need of the patients in a VA hospital setting and how to provide for those needs.

   d) To make available new concepts and techniques for the care of the VA hospital patients.

4. To provide advanced didactic work and specified clinical experience in the area of rehabilitative orthoptics.

   a) To teach the resident to deal with patients who have ocular-motor and visual perceptual dysfunctions that interfere with their ability to perform in their everyday activities.

   b) To interrelate optometric vision therapy (orthoptics) with the areas of low vision, rehabilitative medicine, nursing, ophthalmology, social services and specialized services for both in- and out-patients.

   c) To foster understanding and appreciation of the special needs of the patients in a hospital setting and how to provide for these needs.

   d) To develop an understanding of how the visual performance problems affect the patients's activities socially, academically, and economically.

Educational Content

The residency programs which are currently functioning in rehabilitative optometry emphasize clinical experience which extends beyond the training obtained in the four-year optometry program. The residency programs generally operate under the assumption that basic skills in the case of a low vision patient have already been developed and demonstrated in the professional optometry program. Thus didactic work is provided more often in the form of seminars than in formal lecture.

Clinical Experience

The resident spends considerable time examining, evaluating, and providing care for patients. Table 2:2 shows that the amount of time per week spent with patients varies from approximately 17 hours/week to 34 hours/week. The amount of time devoted to experience in the areas of examination, evaluation, and rehabilitative care varies considerably from program to program. In particular, several of the residencies affiliated with VA Hospitals/Clinics appear to devote more time to the examination and evaluation phases than to

development and implementation of a program for the rehabilitation of the patient. For instance the resident in the ICO/KCVAMC program spends approximately six hours per week with contact lens patients, twelve hours weekly with general clinic patients, two hours per week doing Goldmann Visual field evaluation, four hours weekly in diabetes clinic, four hours weekly in glaucoma clinic and two hours (1 patient) per week with low vision patients.

The OSU/VAMC, Chillicothe, residency is titled a hospital-based residency, but has been included in this study as an example of this type of residency. Training in the care of low vision patients is a relatively small part of the overall program, however. Approximately two hours per week are spent doing low vision examinations, while 12 hours weekly are spent in general clinic examinations, two hours weekly are in contact lenses, and one hour per week is devoted to pathology evaluation.

Somewhat in contrast are the unaffiliated residencies at the University of Alabama School of Optometry and Pennsylvania College of Optometry. The resident in these programs has 32-34 hours per week of clinical experience, most of which is related directly to the examination, evaluation, and care of the low vision patient.

Some of the affiliated residencies also appear to give this emphasis to the low vision patient, however. The resident at SUNY/Northport, VAMC devotes considerable time to contact lenses for the partially sighted, as well as to visual training for the partially sighted. The visual training emphasis appears to be unique to this program.

TABLE 2:2

Clinical Experience Offered in Residencies

Residency	Clinical Experience (as respondents divided it)	Hours Weekly
UA	Rehabilitative Optometry	32
ICO/KCVAMC	Primary Care	12
	Contact Lenses	6
	Visual Field	2
	Glaucoma Clinic	4
	Diabetes Clinic	4
	Low Vision Patients	2
	Total	30
NECO/Boston VAOP	Rehabilitative Optometry	16
	Hospital Based Optometry	16
	Total	32
OSU/Chillicothe VAMC	Primary Care	12
	Contact Lenses	2
	Ocular Pathology Clinic	1
	Low Vision Patients	2
	Total	17
PCO	Rehabilitative Optometry	34
SUNY/Northport VAMC	Contact Lenses	3
	Primary Care	7
	Low Vision	4
	Visual Training	4
	Visual Fields	1
	Electrophysiology Clinic	2
	Total	21
SCCO/LAVACC	Primary Care and Low Vision Exams	
	Total	32

Didactic Material

Since the emphasis of the residencies is clinical and since the fundamental principles of low vision care have been presented to the resident during his previous four years of optometry school, didactic work is generally presented in the form of seminars. Typically 4-6 hours per week are spent in seminar.

Since no written topical outlines were received, it appears the topics covered within the seminar are varied to meet the needs of the resident. In the areas of rehabilitative optometry, special clinical procedures are covered, such as the use of prism in the care of patients with bilateral visual field losses. These are topics which may have been covered in the optometry curriculum, but which may not have been used then due to limited clinical experience.

In addition, clinical case reports are presented during the seminars. Case reports allow treatment plans to be discussed and may provide the basis for topics to be emphasized in seminar.

The topical content of the seminars generally follows the clinical emphasis of the residency. Thus the residency at the University of Alabama School of Optometry, which clinically stresses low vision care, emphasizes topics which relate very directly to low vision care in the seminars. Likewise, the SUNY/Northport VAOC residency seminars incorporate topics in contact lenses, visual training, low vision, and primary care. The residents at the OSU/Chillicothe VAMC spend one hour per week in neurology seminar, 1/2 hour weekly in clinical pathology seminar, one hour weekly in psychiatry seminar, one hour per week in hypertension seminar and one hour weekly in continuing medical education seminar. These seminar topics reflect the hospital character of this particular residency.

Interdisciplinary Experience

During the course of caring for low vision patients, residents may have opportunities to work with other areas which also serve the low vision population. These other groups include ophthalmologists who themselves specialize in low vision examinations, ophthalmologists who are not low vision specialists, orientation-mobility instructors, educators (school teachers, special education teachers, etc.) and others. Table 2:3 presents a comprehensive summary of the groups of services with which some of the residents have opportunity to interact. Following each service group there is a list of the number of residency programs which responded that they have at least an occasional working relationship with the particular area.

In some residencies an interdisciplinary team approach, in which one member of the team coordinates the efforts of all services involved, is used in the care of the low vision patient. The last column in Table 2:3 lists the number of residency programs which include the particular service group as part of an interdisciplinary team. Two of the residencies incorporate no team approach to patient care.

It seems evident that ophthalmologists who are not low vision specialists, rehabilitation counselors, and social agency workers are most often part of the interdisciplinary team. It is perhaps significant that the two residencies which interact with orientation-mobility instructors are the two residencies not affiliated with Veteran's Administration facilities.

TABLE 2:3

Interdisciplinary Exposure of Residents

Discipline	# of residencies in which resident is exposed to this discipline	# of residencies in which this discipline may be part of interdisciplinary team
Ophthalmologist		
Low vision specialist	2	0
Non-LV specialist	6	3
Orientation-mobility instructor	2	1
Low Vision optometry tech./asst.	2	1
Rehabilitation counselor	5	4
Social agency workers	4	3
Psychological counselors	3	0
Educators (incl. spec. ed.)	2	1
Geneticist	1	1

The nature of the clinical experience apparently varies widely among the residencies. The residencies at UA, at SUNY/Northport VAMC, at SCCO/LAVAOC, and at ICO/KCVAMC stress doing complete low vision exams from case history to final dispensing and training. The resident gains more experience in rehabilitative optometry by examining more patients, and because of the greater number of patients, a greater variety of problems is handled than was met in the professional school experience. In the OSU/Chillicothe VAMC program, the resident does complete low vision examinations on patients seen at the OSU College of Optometry. However, when low vision patients are seen at the Chillicothe VAMC, only minimal testing with magnifiers is possible and if further testing or training is necessary, the patient is referred elsewhere.

The residencies at PCO and NECO/Boston VAOC direct the resident's experience differently. In these programs, the most commonly encountered low vision problems are apparently handled by supervised optometry students or optometrist-low vision specialists. When a case requires special treatment, it is channelled to the residents. Thus the resident devotes much of his time with low vision patients in such areas as contact lenses, where special-aperture contact lenses to control illumination, contact lens telescopes, and cosmetic contact lenses may be designed. Other special areas of resident involvement include the design of visual field awareness/expansion devices and training patients in eccentric viewing.

The preschool age low vision patient presents special challenges because of communication and cooperation difficulites which may arise. In some programs, the resident examines the preschool patients as part of his increased clinical experience. Such is the case in the PCO and the UA residencies, the two unaffiliated residencies. The residents at these two institutions examine patients from all age categories. In the other residencies, which are dependent on the clinical populations of the VA facilities, the resident is usually limited to adult patients. This is the case in the NECO/Boston VAOC, ICO/KCVAMC, and SCCO/LAVAOC residencies. In the case of OSU/Chillicothe VAMC, the resident may examine preschoolers with low vision when he is assigned to see patients at the OSU School of Optometry. At SUNY/Northport VAMC, the number of preschool patients is small, so preschoolers are generally examined by a staff optometrist with the resident and/or optometry students observing.

Teaching Responsibilities

In the UA and the ICO/KCVAMC programs, the resident has no formal teaching responsibilities. However, the other five programs do involve the resident in teaching roles, as shown in Table 2:4. The teaching experience would seem to work toward the objective of developing the resident as a potential future educator in the area of rehabilitative optometry.

TABLE 2:4

Teaching Experience in Rehabilitative Optometry Residencies

Residency	Teaching Experience	Hrs./Wk.
UA	None	----
ICO/Kansas City VAMC	None	----
NECO/Boston VAOC	Clinical instruction of optometry student	2-4
OSU/Chillicothe VAMC	Laboratory instruction - special diagnostic skills	0-4
PCO	Lecture in 3rd year optometry course and low vision course to non-O.D.'s	1
SUNY/Northport VAMC	Lecture on ocular and visual manifestations of disease to hospital staff	3
SCCO/LAVAOC	Instruct optometry students in LV clinic. Lecture in LV course. Lectures on visual rehabilitation of partially sighted veterans to non-O.D.'s at LAVAOC	Not Specified

Research

Since the residencies are clinical in nature, basic research is not a requirement in the curricula. However, all of the residencies encourage clinical research. In five of the seven programs, the resident is required to write a publishable paper on original research, a literature review, or on a clinical case. In the NECO/Boston VAOC residency, research is left to the resident's discretion. The resident at OSU/Chillicothe VAMC is strongly encouraged to do research, although no paper is required.

Student Data

The residency programs are all apparently quite similar in the process used to select the resident. Each candidate submits a written application which generally includes such items as letters of recommendation, transcripts, National Board of Optometry scores, and indication that the applicant either has an O.D. degree or will have the O.D. degree before the residency commences. Once the application has been reviewed by the Selection Committee, interviews of the most promising candidates are conducted if tney are felt necessary. Each residency program selects one new resident each year, making a total of seven residents currently receiving training with an emphasis in rehabilitative optometry.

Residencies in rehabilitative optometry are a very recent development. As indicated in Table 2:5, the earliest residency was established at the Kansas City VAMC in 1975. At this time, the KCVAMC residency was a hospital-based residency, not entirely rehabilitative optometry. In 1979 this residency was divided into two residencies, one in rehabilitative optometry, and one in hospital-based optometry. The residency at NECO/Boston VAOC, established in 1976, remains half rehabilitative optometry and half hospital-based. The OSU/Chillicothe VAMC residency is primarily hospital-based with some emphasis in rehabilitative optometry. Thus, it wasn't until 1978 that residencies began to be established with rehabilitative optometry as the major thrust of the curriculum.

TABLE 2:5

Residency Establishment and Accreditation

Residency	Date Established	Date of latest Accreditation	Accrediting Body
ICO/KCBVMC	1975*	1979	COE
NECO/Boston VAOC	1976	Not Indicated	COE
OSU/Chillicothe VAMC	1977	1980 (Provisional)**	COE
UA	1978	1979	COE
PCO	1979	Application has been made	COE
SUNY/Northport VAMC	1979	1979 (Provisional)**	COE
SCCO/LAVAOC	1979	1980	COE

* Date in which Hospital-Based Opotmetry residency began, which divided into two residencies in 1979. (see text).

** See text for description of provisional accreditation.

As indicated in Table 2:5, the American Optometric Association Council on Optometric Education, has accredited most of the residencies. The process of accreditation is initiated when the institution submits an application describing the residency. If the residency as described in the application meets the approval of the Council on Optometric Education (COE), a provisional accreditation may be granted. Arrangements are then made for an on-site visit of the institution by a COE committee during which an evaluation of the facilities and functioning of the residency is made. If the on-site visit finds that the residency program meets COE standards for residencies, the residency program is granted accreditation. Table 2:5 shows that two residencies are provisionally accredited and that one residency has recently applied (1980) for accreditation.

The total number of graduates from the residency programs, 11, is small because of the recency of most of the residencies. Three of the programs will not have their first residents complete the residencies until summer, 1980. Table 2:6 indicates the number of residents currently enrolled, the total number of residents who have completed the program, and what the residents receive upon completion. Most of the residencies award certificates of completion.

TABLE 2:6

Number of Residents

Residency	No. of Residents Currently Enrolled	Total No. of Residents Who Have Completed Program	Length of Program (wks)	Award at Completion of Residency
UA	1	1	52	Diploma
ICO/VAMC	1	5	52	Certificate
NECO/Boston VAOC	1	3	48	Certificate
OSU/Chillicothe VAMC	1	2	52	Certificate
PCO	1	0	52	Undecided
SUNY/Northport VAMC	1	0	52	Certificate
SCCO/LAVAOC	1	0	52	Certificate
Total	7	11		

Current Roles of Graduates

The current roles of the eleven graduates of residencies are shown in Table 2:7.

Of the eleven graduates, four have taken positions on the optometric staffs of Veteran's Administration facilities. Two of these spend an

estimated 50% of their time in activities related to low vision, such as examining low vision patients and instructing residents. The other two individuals spend perhaps 10-15% of their time examining low vision patients.

Two of the graduates are on the faculties of optometry schools. One is involved in low vision instruction full time, while the other is currently teaching in areas not directly related to low vision.

Of the four graduates in private practice, one has begun a practice with a low vision emphasis which he expects to increase with time. Another is located in a group practice and spends approximately 25-30% of his time with low vision patients. The other two graduates in private practice do relatively simple low vision work, such as high adds. For these two individuals, low vision work comprises about 5% of time.

One graduate is a member of the eye clinic staff of a private hospital. He spends approximately 2% of his time in low vision-related examinations.

In analyzing this data, one must remember that all but one of these graduates were in residencies which gave at least as much emphasis to primary care optometry as to low vision. It is perhaps not surprising that several are not involved in teaching or practice related to low vision a majority of the time.

TABLE 2:7

Current Positions of Residency Graduates

Position	Number of Graduates
V. A. Facility staff	4
Optometry School faculty	2
Private practice	4
Hospital-based eye clinic staff	1
Total	11

Cost Factors

The questionnaire included questions which addressed the cost of the residency program. It proved to be very difficult for the various programs to provide a cost analysis, apparently because the residencies make use of examination room space, instructors, secretaries, and other help which are also utilized in other parts of the optometry or V.A. programs. Most programs simply did not seem to have the cost data available and were unable to give comprehensive answers.

The following analysis is, therefore, a composite of the various residencies which was put together from the information gathered about the residencies from many parts of the questionnaire. Typical costs were then assigned to the various areas identified as being part of the residency. These costs were gathered from conversations with optometric administrators as well as from pertinent articles in the literature.

1. Personnel

1 full time equivalent faculty member optometrist	$35,000.
1 low vision technical specialist (e.g., optometric technician, orientation-mobility, rehabilitation counselor) 2 days per week	4,800.
1 secretary 8 hrs per week	1,800.
1 resident's stipend	11,500.
	$53,100.

2. Equipment

Examination equipment (e.g., chairs, ophthalmoscopes, biomicroscope, trial lens set, perimeter, tonometer)	25,000.
Low vision aids for examination	6,000.
Loaner aids	2,000.
	$33,000.

3. Administrative Overhead
(e.g., utilities, fringe benefits, maintenance) $30,000.

TOTAL COST $116,100

Since there is only one resident in the program at a time, the cost of personnel, particularly the faculty member, is perhaps unreasonably high on a per-student basis because the one faculty member could be supervising more that one resident without increasing his time involvement substantially. In other words, a second or third resident could be added to the program without requiring additional faculty; however, other personnel, such as secretarial help, may have to be increased.

The costs in supplying the examination room include many items which would remain functional for perhaps 10 years. These costs therefore represent initial costs. The low vision aids may be useable for an average period of two years before replacement is necessary.

Some of the program costs can be recovered in patient fees. However the number of patients seen in the residencies is so highly variable from program to program that this amount was not estimated.

C - THE UNDERGRADUATE CURRICULUM IN REHABILITATIVE OPTOMETRY

The survey of the nine schools and colleges of optometry included questions which were aimed at gathering information concerning the educational objectives and content of those portions of the undergraduate (professional) curriculum in optometry which are directly related to rehabilitative optometry. Basic background courses such as geometrical optics and anatomy were generally excluded from the survey, except in areas such as magnification which contribute very pointedly to the subject matter of rehabilitative optometry.

Four questionnaires were used to investigate the undergraduate curriculum. One was designed to ascertain the objectives and philosophies of the program in rehabilitative optometry. The second questionnaire was used to gather information concerning the courses directly related to rehabilitative optometry. Questions in the third questionnaire dealt with the Low Vision

Clinic policies, while the fourth questionnaire secured information about the procedures performed and services offered in the course of the low vision examination. Since the natures of the nine programs were not entirely known when the questionnaires were assembled, questions were included which were intended to cover as many different types of programs as possible. During the analysis it was found that some questions did not apply to any of the programs, while others did not yield information which was helpful in this project. These questions are not included in this analysis.

Coverage Given Various Subject Areas

Optics

Questions were posed concerning the specific areas of geometrical and physical optics which relate directly to rehabilitative optometry. The questions were asked of all instructors whose courses include material in optics. The results are found in Table 3:1. The numbers in each column represents the total number of schools responding positively to that particular response category for each subdivision of subject matter. Evidently all areas of optics are covered rather thoroughly, not only on a basic level but also as applied to low vision. The objective of these courses is to present the principles of magnification, image formation, and optical design so the student has a thorough understanding of the magnifiers and other optical and non-optical devices used in the care of the low vision patient.

TABLE 3:1

Optics Coverage

Numbers of schools surveyed offering optics coverage in the following ways:

A. Lecture - Topic is given basic coverage, but is not applied specifically to rehabilitative optometry in this course.

B. Lecture - Topic is given basic coverage and also applied specifically to rehabilitative optometry.

C. Lecture - Basic coverage provided in other courses and is applied to rehabilitative optometry in this course.

D. Laboratory experience

		A	B	C	D
1.	Design of optical system				
	a. Spherical lens forms	9	3	7	7
	b. Aspheric lenses	9	4	7	5
	c. Fresnel lenses	8	3	7	5
	d. Controlling aberrations	9	4	6	4
	e. Galilean telescopes	8	6	5	8
	f. Astronomical telescopes	8	5	5	7
	g. Terrestrial telescopes	8	4	5	8
	h. Nearpoint telescopes	5	6	3	7
	i. Fresnel prisms	7	3	6	6
	j. Lensometer verification of high plus lenses	7	2	3	6
	k. Optical bench verification and specification of thick plus lenses	8	1	4	6
	l. Verification of telescopic systems	3	3	0	6
2.	Magnification				
	a. Relative size magnification	8	9	0	6
	b. Angular magnification	8	9	0	6
	c. Relative distance magnification	8	9	1	5
	d. Apparent magnification (rel. to 25cm)	8	9	1	6
	e. Telescopic magnification	8	9	1	6
	f. Magnification of nearpoint telescopes	7	9	0	6
	g. Influence on image illumination	6	4	2	3
3.	Stops, Pupils and Ports				
	a. Definitions	8	2	5	4
	b. Influence on image brightness	7	1	5	3
	i) Magnifiers	6	1	6	4
	ii) Telescopes	6	1	6	4
	c. Influence on field of view	7	3	4	5
	i) Magnifiers	6	3	5	6
	ii) Telescopes	6	3	5	7
	d. Methods of measuring field of view	7	1	2	5
4.	Physical Optics Topics Important to R.O.				
	a. Diffraction	9	0	3	5
	b. Interference	9	0	3	5
	c. Scatter	8	0	4	4
	d. Absorption	9	0	4	4
	e. Polarization	9	0	4	4

Ocular Pathology, Genetics, Diagnostic Techniques

Part of the questionnaire was designed to gain information concerning the extent to which students are trained in the areas of ocular pathology, genetics, and special diagnostic techniques such as electroretinography, electrooculography, and the visual evoked response.

All schools and colleges of optometry in the survey teach the symptomotology, prognosis, and diagnosis of ocular pathologies. This coursework included pathologies which affect the preschoolers, pathologies which affect the school age child, those which affect the active adult (age 19-55), and those which affect the older adult (over 55). Pointed questions were asked concerning the philosophies toward diagnosis. It was found that different courses within the same school have different objectives concerning diagnosis. Thus most schools responded positively to more than one attitude toward diagnosis. Most schools (8 of 9) have the ultimate objective of teaching the student to be able to identify specific pathological entities, although in one school, the objective is limited to the identification of broad categories of disease entities. In all schools the student is taught to refer those pathological processes which require treatment. In eight of the schools, the student is taught to supply the patient a prognosis of the patient's condition.

Although it was not a question in the survey, three schools volunteered that they teach the implications of various pathologies for the prognosis for low vision prescriptions. It is probable that other schools teach this as well.

All nine of the schools surveyed teach basic principles of genetics. Although there are differences among courses within the same school, it appears that six of the schools teach genetics with the objective of encouraging the student to counsel the patient concerning genetic implications of certain pathological entities. The other three schools teach genetics to provide a background from which the student can refer intelligently for genetic consultations.

Table 3:2 shows the extent to which the schools give exposure to diagnostic techniques. Techniques m-p were write-in categories, so the relatively low number of positive responses probably does not reflect accurately the number of schools which teach those areas. All of the other techniques are taught by a majority of the schools, with most of the techniques being presented by all the schools, particularly the common clinical techniques of ophthalmoscopy and tonometry. The objective of the courses which teach these techniques is to provide the student with an arsenal of diagnostic skills which he can use in identifying the patient's condition.

TABLE 3:2

Coverage of Diagnostic Techniques

Number of schools surveyed which teach diagnostic techniques listed below according to response categories A, B, C, D.

A. Lecture - Topic is given basic coverage, but is not applied specifically to rehabilitative optometry in this course.

B. Lecture - Topic is given basic coverage in this course and is also applied specifically to rehabilitative optometry.

C. Lecture - Basis coverage provided in other courses and is applied specifically to rehabilitative optometry in this course.

D. Laboratory experience

		A	B	C	D
a.	Contrast sensitivity function	6	2	2	2
b.	Spectral sensitivity function	7	0	3	3
c.	ERG	7	3	7	4
d.	EOG	7	2	7	5
e.	VER	6	3	6	4
f.	Fluorescein angiography	8	5	5	0
g.	Dark adaptation	7	1	7	4
h.	Light adaptation	5	1	4	3
i.	Blood pressure	6	3	5	5
j.	Monocular indirect ophthalmoscopy	8	4	4	5
k.	Binocular indirect ophthalmoscopy	8	5	4	5
l.	Tonometry	8	5	3	5
m.	Gonioscopy	8	1	3	3
n.	Ultrasonography	5	0	2	1
o.	Photodocumentation	5	1	1	1
p.	Laser interferometry	3	0	0	0

Visual Fields

Each of the nine schools surveyed teaches detailed material concerning visual fields, beginning with the anatomy and topography of the visual system, including techniques for testing central and peripheral fields, and proceeding to the relating of the visual field defects to areas of the visual pathway. One objective of these courses as regards rehabilitative optometry is to provide additional information to aid in the diagnosis of the disease entity which may be present. A second objective is to provide visual field information which will aid in the prognosis for the patient to perform with the deficiency and for his successful use of low vision aids.

Table 3:3 indicates that all of the schools give coverage to the subject matter of visual fields. One school responded that functional evaluations of visual fields are used; that is, the patient is evaluated on his ability to perform tasks, such as maneuvering through an obsticle course, in addition to the normal test which quantify the visual field in a rather sterile clinical environment.

TABLE 3:3

Visual Field Coverage

Numbers of schools offering the following areas concerning visual fields according to response categories A, B, C, D

A. Lecture - Topic is given basic coverage, but is not applied specifically to rehabilitative optometry in this course.

B. Lecture - Topic is given basic coverage in this course and is also applied specifically to rehabilitative optometry.

C. Lecture - Basic coverage provided in other courses and is applied specifically to rehabilitative optometry in this course.

D. Laboratory experience

		A	B	C	D
1.	Visual pathway topography	9	2	4	2
2.	Central field testing	7	6	4	4
	a. Tangent screen	7	5	5	6
	b. Amsler grid	7	7	5	5
3.	Perimetry	7	5	4	6
4.	Confrontations	8	6	4	7
5.	Illumination level effects	7	5	5	5
6.	Screeners				
	a. Harrington-Flocks	6	4	2	4
	b. Friedman Visual Field Analyzer	6	4	0	2
7.	Techniques for testing low vision patients				
	a. Techniques for gaining fixation	5	8	3	1
	b. Binocular technique	4	5	2	1
	c. Other (specify)	1	2	2	0
8.	Functional evaluation of field defects	0	1	0	0

Rehabilitative Optometry Course

Each of the nine schools has a course which includes much of the material directly related to rehabilitative optometry. This course, required in all nine schools surveyed, may include other subject material as well, such as aniseikonia or geriatrics. Table 3:4 show that the number of hours devoted to rehabilitative optometry varies greatly from school to school, ranging from 10 to 46 hours.

Seven of the nine schools include a laboratory with the course. Again, the amount of time ranges widely, from 3 hours to 20 hours of laboratory.

The objectives of these courses include an understanding of the low vision patient, a knowledge of the procedures involved in a low vision examination, and the ability to determine the course of action, including the application of optical and non-optical aids, which will best serve the patient. Much of the basic material, introduced early in the student's career, is applied directly to rehabilitative optometry in this course, which is typically taught during the third year of optometry school.

TABLE 3:4

Course in Rehabilitative Optometry
Lecture/Lab Data

	UA	UH	ICO	IU	NECO	OSU	PCO	SCCO	SUNY
Course in rehabilitative optometry?	YES	YES	YES	YES	YES	YES	YES	YES	YES
Length of course (clock hours).	20	30	33	10	46	15	26	20	10
Course required?	YES	YES	YES	YES	YES	YES	YES	YES	YES
Laboratory with course-clock hrs.	20	NO	14	6	3	10	20	20	NO

In addition, the course usually includes information concerning other groups of people who serve the low vision population.

In the following paragraphs, the results of the survey in these subject areas are presented.

Low Vision Examination (Lecture/Laboratory Coverage)

All of the nine schools surveyed present course material which outlines methods and procedures for the examination of the low vision patient. This material is presented in various forms, depending on the school's approach. When a segment of the examination is discussed, it may be mentioned in very general terms to give the student a basic understanding of the concepts involved. On the other hand, very specific procedures to be followed may be presented to convey firmly to the student how to approach a certain aspect of testing. It is perhaps true that the tests which are deemed most important or which are most frequently used are stressed in this manner. Many of the concepts, procedures, and low vision aids are emphasized in laboratory experience.

Table 3:5 summarizes the number of schools which present the various aspects of the low vision examination according to the three methods mentioned above. Generally, all schools seem to present material covering all aspects of the examination. Although not every school includes every item listed in the table, the number of items such as electro-optical aids, opaque projectors, and log mar notation, which are totally missing from some programs, is very small. Those items which are ignored by some programs usually are either very rarely if ever used or are areas which are covered by different methodology.

Some schools listed more than one response for a particular element of the examination, indicating material was presented in more than one course-broadly first, then more specifically later.

TABLE 3:5

Low Vision Examination - Lecture/Laboratory Coverage

Number of schools surveyed which present the following elements of the low vision examination according to the methods listed in A, B, C below.

A. Topic mentioned in general terms in lecture.
B. Topic covered in lecture with specific procedures outlined.
C. Laboratory experience.

		A	B	C
1.	Case history	4	8	4
2.	Visual acuity			
	a. Effects of chart construction (projected, externally illum, etc.)	6	7	5
	b. Chart illumination effects	5	8	5
	c. Room illumination effects	4	8	5
	d. Contrast control	5	4	3
	e. Spectral composition control	2	3	1
	f. Letter vs. multi-letter acuities	4	5	4
	g. Jaeger notation	2	6	4
	h. Point type notation	2	7	4
	i. Reduced Snellen	2	7	6
	j. M notation	2	7	4
	k. Log Mar notation	1	0	1
3.	Trial frame refraction			
	a. Use of large intervals of sphere	4	8	4
	b. Use of X-cy/w/large interval of Sturm	4	8	5
	c. Binocularity testing	4	7	3
4.	Testing for the following aids:			
	a. Hand held telescopes	1	7	5
	b. Spectacle mounted telescopes	1	7	4
	c. Nearpoint telescopes	1	7	5
	d. Headborne nearpoint lenses	2	8	6
	e. Stand magnifiers	2	7	5
	f. Hand magnifiers	2	7	5
	g. CCTV	1	7	3
	h. Opaque projectors	2	1	0
	i. Electro-optical aids (night vision scope)	3	3	0
	j. Field awareness/expansion aids (prism, etc)	2	7	5
5.	Testing for the following illumination controls:			
	a. Lighting techniques	5	6	2
	b. Typoscopes	2	6	3
	c. Sunglasses, filters	6	6	3
	d. Visors, side shields	5	5	1
	e. Pinhole spectacles	4	4	1
6.	Ordering and dispensing aids	4	6	1
7.	Contact lens/prosthetics for L.V. patient			
	a. Cosmetic lenses	5	4	0
	b. Pinhole/occluder lenses	7	2	0
	c. C. L. telescopes	5	5	0
	d. Ocular prosthetics	3	2	0
	e. Refractive irregularities	3	5	0
8.	Non-optical aids	4	5	2
9.	Special applications of standard corrections			
	a. High adds	3	5	1

Training the Low Vision Patient (Lecture/Laboratory)

A very important service in the care of the low vision patient is training him to use a low vision aid once it has been prescribed. The questionnaire probed the extent to which the schools teach methods for training patients to use various low vision aids. Seven schools responded that training is covered for all of the areas listed in the survey (excluding the two areas which were written in under "Other"). One school covers training for some of the most commonly used aids, while one school does not teach training methods. These results are summarized in Table 3:6. Some schools gave more than one response. The responses listed for "Other" represent those for which the respondent did not specify what other training is taught.

TABLE 3:6

Training the Low Vision Patient (Lecture/Laboratory Coverage)

Number of schools in which lecture/laboratory covers material concerning training in the use of the following aids, according to the response categories A-D.

A. Lecture - Topic is given basic coverage, but is not applied specifically to rehabilitative optometry in this course.

B. Lecture - Topic is given basic coverage in this course and is also applied specifically to rehabilitative optometry.

C. Lecture - Basic coverage is provided in other courses and is applied specifically to rehabilitative optometry in this course.

D. Laboratory experience

		A	B	C	D
1.	Hand held telescopic aids	2	6	0	2
2.	Headborne telescopic aids	2	6	0	1
3.	Headborne nearpoint aids	2	6	0	1
4.	Hand and stand magnifiers	2	6	0	2
5.	Prisms for field awareness	3	6	0	1
6.	Reverse telescopes	3	5	1	1
7.	CCTV	2	6	0	1
8.	Eccentric viewing	2	5	1	0
9.	Other	2	3	0	0
	a. Handling of contact lenses	0	1	0	0
	b. Posture, lighting, non-optical aids	0	1	0	0

Psychology and Sociology of the Low Vision Patient

All of the schools questioned, present within the rehabilitative optometry curriculum the psychological and sociological problems of the low vision patient. Once again, not every school includes every element asked in the questionnaire in its coursework, but the lowest number of schools responding positively to any particular item in this category was 6, which represents 2/3 of the schools in the survey. This low response was in the area of family attitudes toward the low vision patient. Eight of the schools include instruction on the optometrist's communication with the low vision patient. According to the questionnaire results, psychological and sociological factors for all age groups are taught in most of the schools.

Table 3:7 summarizes the responses related to this subject area.

TABLE 3:7

Psychology and Sociology of the Low Vision Patient

Number of schools in the survey responding positively to the following questions about the rehabilitative optometry curriculum.

	YES
1. Are the following factors covered in the curriculum?	
a. Attitudes of the low vision patient	9
b. Self-image of the low vision patient	7
c. Expectations of the low vision patient	8
d. Motivations of the low vision patient	8
e. Practitioner's attitudes toward low vision patient	8
f. Practitioner's influence on patient motivation	8
g. Practitioner's biases toward certain aids	7
h. Examination methodology to sustain motivation	7
i. Communication with the low vision patient	8
2. Concerning the young child, ages 0-5, which of the following factors are included in the curriculum?	
a. Parental attitudes and emotions	6
b. Counselling of parents regarding child's visual abilities and needs	7
c. Counselling of parents regarding other services available	7
3. Concerning the school-age child, 6-18, which of the following factors are included in the curriculum?	
a. Patient attitudes	8
b. Parent attitudes	6
c. Importance of school environment	8
d. Optometric evaluation of school environment (lighting, contrast, etc.)	6
e. Counselling the teacher in use of aids and needs of low vision student	8
f. Counselling of parents regarding services available	7
4. Concerning the adult, patient, 19-55, which of the following factors are included in the curriculum?	
a. Patient attitudes	9
b. Family attitudes	6
c. Environmental factors	8
d. Vocational/avocational/educational factors	9
5. Concerning the older patient, over 55, which of the following factors are included in the curriculum?	
a. Effects of hearing, mental and other physical losses with time	8
b. Requirements for slower pace, patience, understanding	9
c. Attitudes of the elderly	8

Demography, Epidemiology, Identification of Low Vision Patients

As indicated in Table 3:8, the majority of schools (at least 7) surveyed teach material covering demography, epidemiology and identification of the low vision patient. This subject matter gives the student a better understanding and appreciation of the incidence and prevalence of low vision and also of the need for low vision practitioners.

TABLE 3:8

Demography, Epidemiology, Identification of Low Vision Patients

Number of schools in survey responding positively that the following subject areas pertaining to demography, etc., are included in the curriculum.

		YES
1.	Definitions of low vision, legal blindness, etc.	9
2.	Prevalence of low vision, legal blindness, etc.	7
3.	Availability of care for low vision, legal blindness, etc.	8
4.	Incidence of success in helping low vision patients with various aids.	8
5.	Possibilities and methods of screening potential patients prior to office visit	7

Non-Optometric Services

There are several non-optometric groups of people who serve the low vision patient. All of the schools introduce the students to the services which these groups provide so the student will be prepared to interact with these individuals in the course of caring for a low vision patient. The degree to which the student becomes familiar with these other services varies from school to school. As seen in Table 3:9, most of the schools define each service, describe the services and emphasize the ways in which optometrists interact with each group. Guest lecturers from some of the commonly-encountered services, such as the social worker, are invited to the classroom in most of the schools surveyed.

Sources of counselling for all age groups as well as sources of financial aid for all age groups of the partially sighted are presented to the student in 7-9 of the schools surveyed.

TABLE 3:9

Non-Optometric Services

Number of schools in survey which teach information about non-optometric services which also participate in the care of the low vision patient. Response categories possible were A-F listed below.

A. Definition and description of services given in lecture.
B. Ways of interaction with rehabilitative optometry emphasized in lecture.
C. Guest from the profession lectures to class.
D. Visit to professional/agency.
E. Professional interaction through letters, seminars, etc. pertaining to particular patient's care.
F. No exposure given to this area.

		A	B	C	D	E	F
1.	Ophthalmology, low vision specialist	2	4			2	1
2.	Ophthalmology, non-low vision specialist	5	6	2		4	
3	Optometry, low vision specialist	4	4	3		2	1
4.	Optometry, non-low vision specialist	2	4	1		3	
5.	Optometric low vision technicians or assistants	6	6			1	1
6.	Orientation-mobility instructors	7	5	4		1	
7.	Rehabilitation counselors	5	6	4		1	
8.	Social agency workers	6	4	6		1	
9.	Psychological counselors	7	2	1		2	1
10.	Educators, teachers of partially sighted	5	3	1		1	2
11.	Other (please specify)*	3	4	2		2	
	Administrator, LV Service	1	1	1			
	Social worker, rehab clinic			1			

*Note: of the schools that responded to "Other", only 2 specified what "Other" referred to. Thus the columns do not sum properly.

12. Are sources of counseling for the following age groups covered?

		Yes	No
a.	0-5 years (preschool)	7	
b.	6-18 years (school)	8	
c.	19-55 (active adulthood)	8	
d.	Over 55 years	9	

13. Are sources of financial aid available for the following age groups covered?

		Yes	No
a.	0-5 years	7	
b.	6-18 years	7	
c.	19-55 years	7	
d.	Over 55 years	8	

Low Vision Clinical Experience

It is in the area of clinical experience that the professional (undergraduate) programs in rehabilitative optometry have the greatest differences. Table 3:10 summarizes the clinical exposure which optometry students receive in the nine schools questioned. Seven of the nine schools provide for all optometry students to be in low vision clinic before graduation. Two of the schools provide clinical experience in rehabilitative optometry for only a part of the graduating class.

At the Indiana University School of Optometry approximately 40-50% of the students see low vision patients, the great majority of which are examined at an off-campus clinic in Indianapolis. The number of low vision patients in Bloomington is apparently insufficient to sustain the low vision program. Students are scheduled into the Indianapolis clinic by random drawing. At the New England College of Optometry, students are selected for clinical experience based upon interest and academic performance in the rehabilitative optometry course. The number of students is limited by the number of low vision clinical rotation positions available.

Of the seven schools who schedule all students to see low vision patients, all but one schedule all students for a specified length of time (hours or weeks as shown in Table 3:10) during which patients are examined. At the Illinois College of Optometry, the students are not scheduled for a specified period of time, but they are responsible for scheduling and examining at least one low vision patient before graduation.

Because of the variety of approaches to clinical experience, the number of low vision patients examined by an optometry student varies from 0 to 30 (see Table 3:10). Some schools schedule the students in pairs to examine low vision patients, while others schedule one student to one patient. At the University of Houston College of Optometry students are scheduled in "large teams" to examine low vision patients due to insufficient patient numbers. The lack of patients is attributed to a lack of emphasis in the school on rehabilitative optometry and therefore a lack of exposure in the community.

Two of the schools surveyed provide for some of the first year optometry students to observe low vision evaluations (see Table 3:11). This gives the opportunity for the students to become exposed to the field of rehabilitative optometry early in their optometric education. Two other schools provide for the third year students to observe low vision evaluations and perhaps do some selected testing. This process familiarizes the students with communicating with low vision patients in anticipation of their examining patients during the fourth year.

Except for the Illinois College of Optometry, where third year students may schedule and examine low vision patients, all other schools surveyed provide low vision examination experience in the fourth year of optometry school. As seen in Table 3:11, the extent of the clinical experience varies even for those students who work with low vision patients. Some of the experience may be limited to observation. In instances where students are examining in pairs or groups, the experience may be limited to performing selected tests. In other instances, the student performs the entire exam. Some schools emphasize only one of these methods, while others rely on a combination of the methods.

Typically when a combination of methods is used, the student observes the instructor (O.D.), then progresses to performing selected tests or doing the complete low vision examination.

All of the schools in the survey have low vision clinics located on campus at the school or college site. Some of the schools supplement this patient population by rotating students through off-campus low vision clinics, which may either be administered by the school of optometry or administered by another agency. The distribution of these types of clinical sites is listed by school in Table 3:12.

TABLE 3:10

Clinical Data - Low Vision Clinic

	UA	UH	ICO	IU	NECO	OSU	PCO	SCCO	SUNY
All students in LV clinic?	YES	YES	YES	NO	NO	YES	YES	YES	YES
Min. time in LV clinic	160hr	45hr	---	---	---	20hr	34hr	28hr	20hr
Mean number of patients seen	30	4	1.3	10*	---	3.5	18**	4	no est.
Student/patient ratio	1/1	teams 1	1/1	1-2/1	1/1	1-2/1	2/1	1/1	2/1

*Mean number of patients among those students who see patients
**Includes observations and participations

TABLE 3:11

Low Vision Clinical Responsibilities Given in the Four Years of Optometry School

	1st year	2nd year	3rd year	4th year
UA	None	None	Observe	LV exams
UH	None	None	None	Selected tests
ICO	Some observe	None	LV exam	LV exam
IU	None	None	None	Some do LV exams
NECO	None	None	Some observe	Some do LV exams
OSU	Some observe	None	None	LV exams
PCO	None	None	None	Observe; specific tests; LV exams
SCCO	None	None	None	LV exams
SUNY	None	None	None	Observe; specific tests; LV exams

TABLE 3:12

Low Vision Clinical Sites

Institution	On campus L.V. Clinic	# Off-campus, College-Administered L.V. Clinics	# Off campus College-Affiliated L.V. Clinics
UA	Yes	1	0
UH	Yes	0	0
ICO	Yes	2	8
IU	Yes	1	0
NECO	Yes	0	2
OSU	Yes	0	0
PCO	Yes	1	1
SCCO	Yes	1	2
SUNY	Yes	1	1

Low Vision Examination and Care

It has been shown in previous sections that the optometry students are taught low vision examination and care procedures and philosophies in lecture and that later many, but not all, of the students will be placed in the low vision clinic to examine patients. One of the questionnaires was designed to investigate the nature of the care that actually occurs in the low vision clinic.

Since this questionnaire and its summary are rather lengthy, the summary of the results has been included as an appendix (Appendix E) to this narrative. Generally all topics and elements which were asked concerning lecture material were asked in this questionnaire regarding their inclusion in the actual low vision care approach. These included examination procedures and techniques (including low vision aids used), ordering and dispensing, patient training, special diagnostic testing (VER, ERG, ultrasonography, etc.), and types of non-optometric personnel who work in or with the clinic. A separate section inquired about the means by which care for preschool children with low vision is provided.

For the examination techniques and procedures, two types of responses were requested. First the frequency with which a particular item is used was indicated by one of four choices (sum of all responses for one element equals nine). Secondly the individual(s) who typically perform a particular element of the examination was (were) identified. By far the most common responses for individuals were A-students, B-residents, and C-non-resident O.D.'s. Occasionally one of the other service groups listed in D-H of Appendix 1 were listed; these are summarized in the "Other" column with the number of responses following each letter.

Generally students perform most of the elements of the low vision examination, together with the instructor optometrist. The greatest difference in the clinical examination among schools appears to be in the utilization of non-optometric personnel. Four of the nine schools make use of other personnel, such as mobility instructors, social workers, and optometric assistants, to perform or provide input to parts of the examination such as case history, visual acuities, telescopic evaluations, illumination evaluations.

The degree to which non-optometric groups which serve the low vision patient are utilized by the optometry schools is detailed in Appendix E, #22. Three types of responses were asked for each group. The first concerned the availability of the particular group to the clinic. The second addressed the frequency with which a particular group participates with the clinic in the care of low vision patients. Thirdly, the schools were asked about their use of a "team" approach to coordinated low vision care.

From the summary of responses, it appears that ophthalmologists not specializing in low vision, orientation/mobility instructors, rehabilitation counselors and social workers most frequently share in the care of the patient. It is also apparent that the non-optometric personnel are generally not a regular part of the clinical staff but are consulted occasionally. In approximately half of the schools surveyed, one or two of the non-optometric personnel are part of the staff.

The responses also indicated that the team approach to low vision is practiced rarely.

As seen in Appendix E, #19a (ii), all schools utilize loaner low vision aids, with only one school charging a loaner fee. Typically the low vision examination requires 1.5 to 3 patient visits to the clinic (represents a range of means given by the schools), with the initial visit lasting approximately 1-1/2 to 3 hrs. Pennsylvania College of Optometry reported the first visit requires 3 to 5 hours.

The response to questions in the area of special testing (number 20) are perhaps misleading. Some of the "not used" answers are believed (by the Information Group Director) to mean that this testing is not used in the low vision clinic. However, many of the schools have facilities available to which patients may be referred for procedures such as contrast sensitivity.

All of the schools questioned provide evaluation of the preschooler with low vision. Since communication and cooperation can present problems in this age group, testing is generally abbreviated and limited to the abilities of the patient to respond. In most of the programs, the optometry student examines the preschooler. However in a few of the schools, SUNY for example, the preschooler is examined by a staff optometrist while students and residents observe. A summary of the procedures used in the various schools is listed in Appendix E, #21.

Among the services offered the preschooler are low vision aids (most commonly used are listed in #21b), counselling (see #21c), and vision training (see #21f).

Levels of Student Competency

It appears clear that the extent of an optometry student's experience in rehabilitative optometry is greatly influenced by which school he attends. All schools have some type of minimum competencies which must be achieved although this is not an easy statement to interpret. Table 3:13 summarizes these competencies.

The competencies listed at Level 1 for each school are those which are minimum requirements for graduation. All schools require passing the lecture course which covers rehabilitative optometry. However this requirement is complicated by the fact that some of the courses include other material such as aniseikonia, binocular vision testing and the visual characteristics of geriatric patients. This means that it may be possible for a student to fail in the material concerning rehabilitative optometry and yet pass the course.

Most of the schools also require successful completion of the clinical experience for graduation. For two of the schools, as previously mentioned, clinical experience represents a second or advanced level of competency available only to a part of the class.

In four of the schools which require clinical training as a minimum competency, additional clinical training is offered to those capable students who are interested. This additional experience may include examination of a greater number of patients, participation in the care of patients with complex problems requiring more sophisticated solutions and/or an advanced course or seminar in low vision.

These vast differences in experience among students graduating from the various optometry schools would seem to make it critical for the residency programs to investigate a candidate's background and either refuse a candidate with a weak background (perhaps when the student had no control over his

experience) or make allowances in the residency program for interested students who may have weak backgrounds.

TABLE 3:13

Levels of Competency in Rehabilitative Optometry

Institution	Levels of Competency
UA	Level 1 - Pass course; complete clinical assignment (all students)
UH	Level 1 - Pass course; complete clinical assignment (all students)
ICO	Level 1 - Pass course; examine minimum 1 LV patient (all students) Level 2 - Further clinical experience; outside clinical experience (optional)
IU	Level 1 - Pass course (all students) Level 2 - LV clinical experience (50% of students)
NECO	Level 1 - Pass course (all students) Level 2 - LV clinical experience (interested, capable students)
OSU	Level 1 - Pass course; complete clinical assignment (all students) Level 2 - Further clinical experience (interested students)
PCO	Level 1 - Pass course; complete clinical assignment, 4 wks. (all students) Level 2 - Advanced course (elective) Level 3 - Internship - 12 wks. clinical experience, 60-80 cases (interested, capable students)
SCCO	Level 1 - Pass course; complete clinical assignment (all students)
SUNY	Level 1 - Pass course; complete clinical assignment - basic low vision exam (all students) Level 2 - Further clinical experience - more sophisticated problems (interested students)

CHAPTER II - STATEMENT OF COMPETENCY OBJECTIVES AND THEIR RELATIONSHIP TO THE PRACTICE OF REHABILITATIVE OPTOMETRY

Defined Area:

Rehabilitative optometry, for the purpose of this project, is defined as that area of optometry which includes the knowledge, skill, and attitudes needed to provide appropriate and cost effective care for patients whose visual capabilities, after correction of their refractive error and the use of standard adds, are inadequate for the efficient performance of vision-related tasks in their vocation, avocation, social interaction, or daily living.

Competency Objectives:

The Rehabilitative Optometry Project is a patient-centered care project. The education and training of optometrists to provide this patient-centered rehabilitative care requires the knowledge, skills and attitudes acquired in the general optometric curriculum, but with additional and special emphasis on the following objectives:

1. Knowledge of the epidemiology of low vision.

2. Knowledge and understanding of the role of hereditary, congenital, and acquired ocular and systemic anomalies in low vision.

3. An understanding of the roles of vision impairment and the age of onset on the efficient performance of vision-related tasks.

4. An understanding of the role of other sensory modalities for the efficient performance of visually impaired patients in their vocation, avocation, social interaction, or daily living.

5. An understanding of the social, emotional, physical, intellectual and psychological problems in the management of visually impaired patients.

6. An understanding of the concepts of rehabilitative methodology.

7. Knowledge and skills needed in the design, procurement, evaluation, application, and modification of devices and aids to provide optimum vision performance of visually impaired patients and those with special visual requirements.

8. Knowledge of the role of environment and its modification in providing optimum visual performance for visually impaired patients.

9. Knowledge and diagnostic abilities necessary to detect and diagnose those ocular, neurological, and other anomalies causing vision impairments and to provide for their appropriate management.

10. Knowledge and skills needed in the examination and evaluation of the visual status and vision performance abilities of visually impaired patients.

11. Knowledge necessary for the selection of appropriate therapy, patient education, and for the continuing care of visually impaired patients.

12. Knowledge and skills needed for the development of appropriate interpersonal relationships in the care of visually impaired patients.

13. Appreciation of the need for education of the public regarding vision and vision impairments.

14. Understanding and appreciation of the roles and services of other professions working with the visually impaired and their health care contributions in a cooperative multi-disciplinary care program.

15. Understanding and appreciation of the vocational, legal, social, financial, and other benefits available from community, state, regional, and federal resources for handicapped patients, and the ability to assist patients to obtain the appropriate benefits.

16. Understanding the practice administration and economic concepts involved in the delivery of health care to visually impaired patients.

Discussion:

Optometrists currently are involved in rehabilitative optometry in a variety of ways with roles and responsibilities that vary with the situation. A realistic set of competency objectives therefore should recognize the strengths and weaknesses of present situations. The objectives should be aimed at achieving an ideal but should be sufficiently flexible so as to permit patients to be well served in a variety of settings and situations. Educationally, this means that in addition to demanding mastery of the currently necessary skills, the successful curriculum provides the opportunity and challenge to develop a sound theoretical basis for future learning. It is both efficient and effective to prepare a student to be a competent learner if his or her role is not to be static but rather is expected to continually evolve as a result of new knowledge and new applications of existing methods.

Above all, the patients who seek out the rehabilitative optometrist belong to a group characterized by a high degree of individual differences. Each patient requires of his or her doctor the ability to approach the patient's goals and form a set of objectives for vision care that is truly unique for the patient. Most vision care patients have organically healthy visual systems. The rehabilitative patient, however, frequently presents a more complex circumstance. The rehabilitative optometrist must therefore be able to differentiate between those conditions that are best remediable by optometric or by other means. Where the usual patient receives complete care from the optometrists or optometrically trained assistant, the best rehabilitative care may involve

the services of other disciplines. The usual patient can have his skills measured against a norm and then have the abnormal visual skills corrected to normal, thereby preparing the individual to meet the visual requirements of employment, recreation, or daily living. The rehabilitative patient usually requires counseling and assistance to seek activities within the visual abilities or approaches to tasks that permit adaptation of reduced visual skills to successfully, safely, and profitably achieve life's goals.

Traditionally, rehabilitative optometrists have worked as most other optometrists, in a solo practice setting. Indeed they have been responsible for much of the state of the art, handing down much knowledge in the field informally, or if formally, without theoretical support, except in the areas of optical design and physiological optics. Recent years have seen optometric rehabilitative care move into institutions, both those for blind rehabilitation (where many patients were found not to be totally blind but only partially so) and those doing rehabilitation of persons with other types of handicaps. Some of the results of this integration of optometry with other rehabilitative disciplines have been demands for description of this trend in the professional optometric literature and a greater interest by students and practitioners in specialization in rehabilitative optometry. It has also brought about development of interdisciplinary education and patient care programs and growth of institutional visual rehabilitative care. Thirdly, it has resulted in a definition of the personality traits, knowledge, and special skills in communication and human relations required of the practitioner for successful rehabilitative optometric treatment.

For the future, the curriculum objective should provide opportunity for flexibility in rehabilitative optometric curriculum that will allow rigorous training in rehabilitative optometry with a view to preparation for several modes of practice. While the multiple practice model may be the ideal urban setting for rehabilitative optometry, we must recognize that many optometrists will continue to work in rural settings, isolated from other resources, and must be able to provide an appropriate level of care in that setting. In view of the aging of our population and the rising incidence of visual impairment, hospital or institutional practice requires competence in appraisal of visual handicaps.

Optometry has concerned itself with rehabilitation in the sense that most vision impairment can be remediated but not cured. Virtually 100% of the population over age 45, for example has significantly impaired accommodation. Optometrists have for years been compensating for this while fitting patients to efficiently and effectively perform near point tasks. More recently, optometry has evolved methods and approaches to abnormal visual development to aid children in visual tasks related to learning. It is only natural to extend into the formal area of rehabilitation of the more unusual and disabling impairments, the treatment skills, and the specialized approaches which best combine to utilize a variety of competencies to foster effective and efficient patient care in any setting.

APPENDIX A

Project Staff

APPENDIX A

Project Staff

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APPENDIX B

Advisory Committee

APPENDIX B

Advisory Committee

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APPENDIX C

Project Consultants

APPENDIX C

Project Consultants

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APPENDIX D

Instructions and Questionnaires for Data Collection

APPENDIX D

Instructions and Format for Data Collection

Administering the Questionnaire

1. Arrange an uninterrupted time with the potential respondent during which the questionnaire will be completed.

2. Provide the respondent with background concerning the project. Be sure he/she understands the purpose for the questionnaire.

3. Emphasize that the data must represent the current state of the art regarding curricula in rehabilitative optometry. A negative, or "not done", answer is as important and valid as a "routinely done" answer.

4. Read question, possible answers (for closed-ended questions) and record responses. Each question must be given a response so it is known the topic was considered. Explain any wording that may be unclear. Comments given by the respondent concerning a multiple choice answer may be added to clarify. Whenever an "other" answer is given, please specify what the "other" is.

5. For open-ended questions, record the responses as succinctly yet accurately as possible. Read your written answer back so the respondent can make any changes to clarify the answer. If additional space is needed, please use the back of the sheet.

6. Ask for a copy of any written objective, syllabus, etc. which may be available.

7. Thank the respondent at the end of the session for his/her time and cooperation.

8. When all possible respondents have been questioned, check through the questionnaires to see if there are any topic areas which do not seem to be covered in any course. If such areas exist, poll knowledgeable persons in the college who may know if these areas are included in any other courses in the curriculum which may have been overlooked.

9. When all questionnaires are completed, send the complete package of questionnaires together to:

William L. Brown
OSU College of Optometry
338 West Tenth Avenue
Columbus, OH 43210

It is important that all completed questionnaires be received by February 15, 1980. Thank you very much for your very important help in this project.

Instructions for Administration of Questionnaires

The purpose of these questionnaires is to gather information concerning the current curricula in rehabilitative optometry at the schools and colleges of optometry. In order for the data to accurately reflect the curricula, it is important that the data gathered to be as complete and accurate as possible.

The responsiblity for completeness and accuracy rests on the data-gatherer. The questionnaires are vehicles for gathering data, but you must act as interpreter when wording is unclear, and also record additional information about the program when the questionnaire doesn't seem to probe for the data which your curriculum offers.

If the school or instructor has published educational objectives applicable to courses or programs in rehabilitative optometry, please submit a copy.

The Questionnaire

The questionnaires, five in number, are designed to collect information concerning lectures, laboratories, and clinical experiences which contribute to the optometric education in rehabilitative optometry. Information will be gathered concerning optometry curriculum and the residency curriculum (if present).

1. Overview of Optometry Curriculum in Rehabilitative Optometry.

   Purpose:

   This questionnaire is designed to extract the basic curriculum design in rehabilitative optometry and the philosophy behind this design, without considering the residency program if one exists.

   This questionnaire should be addressed to the head of the curriculum committee or the head of the academic department or division which contains rehabilitative optometry.

2. Course Data Related to Rehabilitative Optometry.

   Purpose:

   This questionnaire is designed to gather information from various courses and laboratories which may contribute directly to education in rehabilitative optometry. The questionnaire is divided into 9 sections covering different academic areas such as optics, ocular pathology, etc. It is devised so that if a section does not apply to a particular course, that section is skipped and the next is considered. Since a course may cover some information in more than one section, it is important that the instructor be given an opportunity to respond to all section headings.

Comments:

In Sections I, II and III many of the questions ask for the method-lecture or laboratories by which topics are covered by a particular course. As many methods as apply to a particular course may be circled for a single topic. A single topic may be covered by different methods in different courses.

Addressees:

This questionnaire should be presented to the instructor of every course in the optometric curriculum that even remotely could have input in any of the topic areas. Only after all topic areas have raised negative responses should a course which is potentially applicable be eliminated. The questionnaire should also be presented to every instructor of courses in the residency program in rehabilitative optometry, it one exists.

3. Low Vision Clinic Administrative Policies and Data.

Purpose:

This questionnaire is designed to gather information regarding the basic administrative policies and philosophies governing the rehabilitative optometry low vision clinic.

Addressee:

It should be addresssed to the Director or Chief of the Low Vision Clinic.

4. Low Vision Examination

Purpose:

This form is designed to gather information about the nature of the low vision evaluation performed in the Low Vision Clinic. The questions differentiate between the roles of optometry student and resident (if applicable) in the clinic, so information is gathered about both programs.

Comments:

In most cases, the respondent is asked to indicate both the relative frequency with which a procedure is preformed and the particular person who performs the procedure. In the section probing clinic personnel, three separate responses are required for each profession. In this section, the design is to determine how old a patient must be in order to receive services from the clinic in the various areas of expertise.

Addressee:

This questionnaire should be addressed to the Director or Chief of the Low Vision Clinic.

5. Residency in Rehabilitative Optometry.

Purpose:

Previous questionnaires investigate the lecture and clinical background which a resident in rehabilitative optometry receives. This questionnaire is designed to collect administrative, statistical, and philosophical data describing residency program.

Addressee:

This questionnaire should be addressed to the coordinator of the Residency Program in Rehabilitative Optometry.

Overview of Optometry Curriculum in Rehabilitative Optometry.

Name of Respondent _____

Position _____

School _____

1. In the optometry curriculum, is there a single course which includes the core of the material related to rehabilitative optometry?

   Yes No

   If NO, please go on the Question 2.

   If YES, please answer the following questions relative to the course in rehabilitative optometry.

   a. How long is the course (clock hours of lecture)? _____

   b. Does the course have other material besides rehabilitative optometry?

      Yes No

      If YES, what other material is presented?

      How many lecture hours are devoted to rehabilitative optometry? _____

   c. Does the course have a laboratory associated with it?

      Yes No

      If YES, how many total lab hours are devoted to rehabilitative optometry? _____

   d. Where does the course come in the student's experience relative to clinical experience in rehabilitative optometry?

   e. Is the course A. optional B. required?

   f. If optional, what percentage of the graduating class take the course by the time they graduate? _____

2. Are courses related to rehabilitative optometry available at other nearby schools or departments?

   Yes No

   If YES, please describe courses which have been taken by students.

3. Is the curriculum designed with the intent that all students have a minimum proficiency in rehabilitative optometry?

Yes No

If YES, what is the minimum proficiency: (e.g., passing a course, passing a skills test, minimum number of patients observed or examined)?

4. Which of the following statements best characterizes the intent of the rehabilitative optometry curriculum (excluding residents).

A. To expose all students to rehabilitative optometry and bring them to some minimum level of competency.

B. To bring all students to a minimum level of competency but allow others to attain higher levels of competency.

C. To expose some by not all students to rehabilitative optometry and bring the select group to some specified level of proficiency.

D. Other (please specify)

a. If A is circled, please answer the following.

i) Is it intended that students would refer patients with visual acuity poorer than some level to low vision specialists?

Yes No

Explain if necessary

ii) Is further training expected as necessary for those who wish to specialize in low vision?

Yes No

b. If B was circled in 4 above, please answer the following:

i) What are the various levels of competency?

ii) How are the students chosen for higher levels of competency?

iii) How are higher levels of competency achieved?

iv) Is further training beyond the highest competency level available, to be expected for those who wish to specialize in low vision?

Yes No

c. If C was circled, please answer the following.

i) Is it intended that students with no exposure would refer patients with visual acuity poorer than some level to low vision specialists?

Yes No

If YES, how is this intent expressed to the student?

ii) How are those exposed to rehabilitative optometry chosen?

iii) Is it intended that those who wish to specialize in low vision should seek further training?

Yes No

iv) What exposure to rehabilitative optometry do the select group receive?

Course Data Related to Rehabilitative Optometry

Course Name _____

Instructor/Respondent _____

School _____

Class Year to which course taught? 1st 2nd 3rd 4th Resident

Lab with this course? Yes No

Required or optional?
If optional, % of each graduating class taking course _____

I. Does this course include topics in Optics

Yes No

If NO, please go on the Section II.

If YES, please indicate the type of coverage your course gives to a variety of topic areas by responding with as many of the following types of coverage A-E as apply.

Response categories

A. Lecture - basic coverage, not applied specifically to rehabilitative optometry.
B. Lecture - basic coverage and also applied specifically to rehabilitative optometry.
C. Lecture - topics from previous course applied to rehabilitative optometry.
D. Laboratory experience.
E. No coverage of this topic in this course.

1. Design of optical systems					
a. Spherical lens forms	A	B	C	D	E
b. Aspheric lenses	A	B	C	D	E
c. Fresnel lenses	A	B	C	D	E
d. Controlling aberrations	A	B	C	D	E
e. Galilean telescopes	A	B	C	D	E
f. Astronomical telescopes	A	B	C	D	E
g. Terrestrial telescopes	A	B	C	D	E
h. Nearpoint telescopes	A	B	C	D	E
i. Fresnel prisms	A	B	C	D	E
j. Lensometer verification of high plus lenses	A	B	C	D	E
k. Optical bench verification and specifications of thick plus lenses	A	B	C	D	E
l. Verification of telescopic system	A	B	C	D	E

2. Magnification

a. Relative size magnification	A	B	C	D	E
b. Angular magnification	A	B	C	D	E
c. Relative distance magnification	A	B	C	D	E
d. Apparent magnification (rel. to 25 cm)	A	B	C	D	E
e. Telescopic magnification	A	B	C	D	E
f. Mag. of nearpoint telescopes	A	B	C	D	E
g. Influence on image illumination	A	B	C	D	E

3. Stops, Pupils and Ports

a. Definitions	A	B	C	D	E
b. Influence on image brightness	A	B	C	D	E
i) Magnifiers	A	B	C	D	E
ii) Telescopes	A	B	C	D	E
c. Influence of field of view	A	B	C	D	E
i) Magnifiers	A	B	C	D	E
ii) Telescopes	A	B	C	D	E
d. Methods of measuring field of view	A	B	C	D	E

4. Physical Optics Topics Important to R.O.

a. Diffraction	A	B	C	D	E
b. Interference	A	B	C	D	E
c. Scatter	A	B	C	D	E
d. Absorption	A	B	C	D	E
e. Polarization	A	B	C	D	E

II. Does any portion of this course deal with ocular pathology, genetics, or diagnostic techniques?

If NO, please go on to Section III.

If YES, please answer the following questions.

1. Is differential diagnosis of ocular pathologies taugnt in this course?

Yes No

a. If YES, which of the following approaches toward diagnosis and prognosis are the students taught to follow (more than one possible).

A. Refer any abnormal health finding to medical or other specialists for diagnosis.
B. Diagnose the pathology and refer only those which are deemed to require treatment or which cannot be accurately identified.
C. Supply the patient with prognosis.
D. Rely on outside referrals to supply prognisis.
E. Other

b. Concerning diagnosis, how specific a diagnosis is taught and encouraged?

A. Diagnosis limited largely to "normal-abnormal".
B. Diagnosis limited largely to broad pathological categories such as "chorioretinitis".
C. Diagnosis aimed at the specific disease entity.
D. Other (please specify)

2. Pathologies affecting which of the following patient age groups are covered in this course?

A. 0-5 (preschool)
B. 6-18 (school age)
C. 19-55 (active adulthood)
D. Over 55
E. Not-covered in this course

3. Are genetic characteristics and implications of ocular pathologies taught in this course?

Yes No

a. If YES, which of the following are major objectives of the material on genetics?

A. To provide a broader background for the student for referral purposes.
B. To encourage the student to counsel the patient concerning genetic implications of particular pathological entities.
C. Other

4. Using the response categories A-E from Section I above, please indicate the coverage given to the following techniques in your course as related to diagnosis.

a. Contrast sensitivity function	A	B	C	D	E
b. Spectral sensitivity function	A	B	C	D	E
c. ERG	A	B	C	D	E
d. EOG	A	B	C	D	E
e. VER	A	B	C	D	E
f. Fluorescein angiography	A	B	C	D	E
g. Dark adaptation	A	B	C	D	E
h. Light adaptation	A	B	C	D	E
i. Blood pressure	A	B	C	D	E
j. Monocular indirect ophthalmoscopy	A	B	C	D	E
k. Binocular indirect ophthalmoscopy	A	B	C	D	E
l. Tonometry	A	B	C	D	E
m. Genioscopy	A	B	C	D	E
n. Ultrasonography	A	B	C	D	E
o. Photodocumentation	A	B	C	D	E
p. Other (Laser interferometry, etc)	A	B	C	D	E

III. Does this course cover topics concerning Visual Fields?

Yes No

If NO, please go to Section IV.

If YES, please use the responses A-E in Section I above to indicate the coverage given to the following topics in this course.

1.	Visual pathway topography	A	B	C	D	E
2.	Central field testing	A	B	C	D	E
	a. Tangent screen	A	B	C	D	E
	b. Amsler grid	A	B	C	D	E
3.	Perimetry	A	B	C	D	E
4.	Confrontations	A	B	C	D	E
5.	Illumination level effects	A	B	C	D	E
6.	Screeners	A	B	C	D	E
	a. Harrington-Flocks	A	B	C	D	E
	b. Friedman Visual Field Analyzer	A	B	C	D	E
7.	Techniques for testing low vision patients	A	B	C	D	E
	a. Techiques for gaining fixation	A	B	C	D	E
	b. Binocular technique	A	B	C	D	E
	c. Other (specify, e.g., functional	A	B	C	D	E

IV. Does this course include elements of the low vision examination (e.g., refraction, optical aid testing, illumination testing, C.L. testing) not covered in questions I-III above?

If NO, please go to Section V.

If YES, please indicate the type of coverage given in this course to the following areas as related to the low vision patient, circling the appropriate letters as described below.

A. Topic mentioned in general terms in lecture
B. Topic covered in lecture with specific procedures outlined
C. Laboratory experience
D. No coverage of this topic in this course

1.	Case history	A	B	C	D
2.	Visual acuity	A	B	C	D
	a. Effects of chart construction (projected, externally illuminated, etc).	A	B	C	D
	b. Chart illumination effects	A	B	C	D
	c. Room illumination effects	A	B	C	D
	d. Contrast control	A	B	C	D
	e. Spectral composition control	A	B	C	D
	f. Letter vs. multi-letter acuities	A	B	C	D
	g. Jaeger notation	A	B	C	D
	h. Point type notation	A	B	C	D
	i. Reduced Snellen	A	B	C	D
	j. M notation	A	B	C	D
	k. Log Mar notation	A	B	C	D

3. Trial frame refraction

a. Use of large intervals of sphere	A	B	C	D
b. Use of cross-cylinder with large interval of Sturm	A	B	C	D
c. Binocularity testing	A	B	C	D

4. Testing for the following aids

a. Hand held telescopes	A	B	C	D
b. Spectacle mounted telescope	A	B	C	D
c. Nearpoint telescopes	A	B	C	D
d. Headborne nearpoint lenses	A	B	C	D
e. Stand magnifiers	A	B	C	D
f. Hand magnifiers	A	B	C	D
g. CCTV	A	B	C	D
h. Opaque projectors	A	B	C	D
i. Electro-optical aids (night vision scope)	A	B	C	D
j. Field awareness/expansion devices (e.g. prism, reverse telescopes, mirrors)	A	B	C	D

5. Testing for the following illumination controls

a. Lighting techniques	A	B	C	D
b. Typoscopes	A	B	C	D
c. Sunglasses, filters	A	B	C	D
d. Visors, side shields	A	B	C	D
e. Pinhole spectacles	A	B	C	D

6. Ordering and dispensing aids (including verification) A B C D

7. Contact lens/prosthetics for L.V. patient

a. Cosmetic lenses	A	B	C	D
b. Pinhole occluder lenses	A	B	C	D
c. C.L. telescopes	A	B	C	D
d. Ocular prosthetics	A	B	C	D
e. Refrative irregularities	A	B	C	D

8. Non-optical aids A B C D

9. Special applications of standard methods of correction (specify) A B C D

V. Does this course cover topics related to non-optometric professions which work with low vision patients?

If NO, please go to Section VI.

If YES, please indicate the extent of the exposure which students receive to the following groups by marking as many of the following descriptions that apply.

A. Definition and description of services given in lecture.
B. Ways of interaction with rehabilitative optometry emphasized in lecture.
C. Guest from the profession lectures to class.
D. Visit to professional/agency.
E. Professional interaction through letters, seminars, etc. pertaining to particular patients care.
F. No exposure given to this area.

1. Ophthalmology, low vision specialist	A	B	C	D	E	F
2. Ophthalmology, non-low vision specialist	A	B	C	D	E	F
3. Optometry, low vision specialist	A	B	C	D	E	F
4. Optometry, non-low vision specialist	A	B	C	D	E	F
5. Optometric low vision technicians or assistants	A	B	C	D	E	F
6. Orientation-mobility instructors	A	B	C	D	E	F
7. Rehabilitation counselors	A	B	C	D	E	F
8. Social agency workers	A	B	C	D	E	F
9. Psychological counselors	A	B	C	D	E	F
10. Educators, teachers of partially sighted	A	B	C	D	E	F
11. Other (please specify, e.g. Rehab. teachers)	A	B	C	D	E	F

12. Are sources of financial aid available for the following age groups covered in this course?

a. 0-5 years (preschool)	Yes	No
b. 6-18 years (school)	Yes	No
c. 19-55 (active adulthood)	Yes	No
d. Over 55	Yes	No

13. Are sources of financial aid available for the following age groups covered in this course?

a. 0-5	Yes	No
b. 6-18	Yes	No
c. 19-55	Yes	No
d. Over 55	Yes	No

VI. Does this course cover topics related to the <u>psychological</u> and <u>sociological</u> and other non-visual factors in low vision care?

Yes No

If NO, please go to Section VII.

If YES, please answer the following questions.

1. Are the following factors included in this course?

a. Attitudes of the low vision patient	Yes	No
b. Self-image of the low vision patient	Yes	No
c. Expectations of the low vision patient	Yes	No
d. Motivations of the low vision patient	Yes	No

e. Practitioners' attitudes toward low vision patients — Yes No
f. Practitioners' influence on patient motivation — Yes No
g. Practitioners' biases toward certain aids — Yes No
h. Examination methodology to sustain motivation — Yes No
i. Communication with the low vision patient — Yes No

2. Concerning the young child, ages (0-5), which of the following factors are included in this course?
   a. Parental attitudes and emotions — Yes No
   b. Counseling of parents with respect to child's visual abilities and needs — Yes No
   c. Counseling of parents regarding other services available — Yes No

3. Concerning the school age child (6-18), which of the following factors are included in this course?
   a. Patient attitudes — Yes No
   b. Parent attitudes — Yes No
   c. Importance of school environment — Yes No
   d. Optometric evaluation of school environment (lighting, contrast, etc). — Yes No
   e. Counseling the teacher in use of aids, and needs of low vision student — Yes No
   f. Counseling of parents regarding services available — Yes No

4. Concerning the adult (19-55) patient, which of the following factors are included in this course?

   a. Patient attitude — Yes No
   b. Family attitude — Yes No
   c. Environmental factors — Yes No
   d. Vocational/avocational/educational factors — Yes No

5. Concerning the elderly patient (over 55) are the following factors included in the course?
   a. Effects of hearing, mental and other physical losses with age — Yes No
   b. Requirements for slower pace, patience, understanding — Yes No
   c. Attitudes of the elderly — Yes No

VII. Does this course cover topics related to the <u>definitions</u>, <u>demography</u>, <u>epidemiology</u> and <u>identification</u> of low vision patients? Yes No

If NO, please go the Section VIII.

If YES, please indicate which of the following topics are presented in the course.

1. Definitions of low vision, legal blindness etc.
   Yes No

2. Prevalence and incidence of low vision, legal blindness etc.
   Yes No

3. Availability of care for low vision, legal blindness etc.
   Yes No

4. Incidence of success in helping low vision patients with various aids
   Yes No

5. Possibilities and methods of screening patient prior to office visit
   Yes No

VIII. Does this course include topics related to the training of low vision patients?
   Yes No

If NO, please go to Section IX.

If YES, please use letters A-F from Section I to indicate the extent of coverage of training patients in the following areas.

1. Hand held telescopic aids	A	B	C	D	E	F
2. Headborne telescopic aids	A	B	C	D	E	F
3. Headborne nearpoint aids	A	B	C	D	E	F
4. Hand and stand magnifiers	A	B	C	D	E	F
5. Prisms for field awareness	A	B	C	D	E	F
6. Reverse telescopes	A	B	C	D	E	F
7 CCTV	A	B	C	D	E	F
8. Eccentric viewing	A	B	C	D	E	F
9. Others (e.g. reading stand)	A	B	C	D	E	F

IX. Instructor and Course Information.

Please give some information about your background and the course structure.

1. Which, if any, of the following degrees in Opt./Phys. opt. do you have?
   A) O.D. B) M.S. C) Ph.D. D) Other (specify)

2. What degrees or background other than those listed above do you have?_____

_____

64

3. How many times have you taught this course, and over how many years has this been spread?

4. What are the major educational objectives of this course?

5. If the objectives stated above do not include any directly related to rehabilitative optometry, are there any secondary objectives which might relate to rehabilitative optometry.

6. If this course is taught to residents in rehabilitative optometry, how does it extend or enhance the knowledge/expertise of the resident beyond that of a graduate in optometry?

7. Are guest lecturers used in this course relative to rehabilitative optometry?

Yes No

a. If YES, please describe their professional or other titles and topics discussed.

Low Vision Clinic Administrative Policies and Data

Respondent _____

Position _____

School _____

1. Must a patient be referred in order to be examined in the Low Vision Clinic?

   Yes No

   If YES, 1) which of the following is/are considered acceptable sources or referral?

   A. O.D. low vision specialist
   B. M.D. low vision specialist
   C. O.D., non-low vision specialist
   D. M.D., general practitioner
   E. Ophthalmologist, non-low vision specialist
   F. Orientation - mobility instructor/renabilitation counselor
   G. Public school teacher
   H. Another low vision patient/self
   I. Other (e.g. parent, family) _____

   2) Please list any visual acuity, visual field, visual performance or other referral criterion which must be met in order to be seen in the Low Vision Clinic.

2. Are any self-administered screening tests sent to prospective patients who inquire about the Low Vision Clinic?

   Yes No

   If YES, please list them.

3. Are follow-up visits scheduled regularly for each patient?

   Yes No

   a. If YES, 1) please describe the followup schedule.

   2) How are patients notified of a follow-up visit?

b. If NO, why/when are follow-up visits not scheduled (e.g. not felt necessary, lack of personnel for follow-up system)?

4. What schedule of hours does the Low Vision Clinic keep during the weeks class is in session?

5. What schedule of hours does the Low Vision Clinic keep during the summer?

6. Which of the following statements most closely describes the typical instructor-student-patient relationship for patients seen by students?

   A. Patients are examined by optometry students under the supervision of an optometrist.
   B. Patients are examined by the optometrist with the students as observers.
   C. Patients are examined by the optometrist early in the student's experience with the student assuming more responsibility with further experience.
   D. Other (please specify)

7. Are all students scheduled in the Low Vision Clinic before graduation?

   Yes No

   a. If NO, for what reason(s) are students not scheduled?

8. If low vision patients are seen during the summer, are the patients examined by:

   A. students
   B. optometrists
   C. other (specify)

9. What is the total number of individual patients seen in the Low Vision Clinic during
   a 12 month year? _____
   the summer period _____

10. What are the low vision clinic requirements for graduation?

    A. Minimum number of patients examined (please specify)_____
    B. Minimum number of low vision examinations observed (please specify) _____

67

C. Minimum number of hours attended in Low Vision Clinic (please specify) _____
D. Other (please specify)

11. How long does the patient stay at the clinic during the initial visit?

12. What is the mean number of visits for a typical low vision patient?

13. If more than one visit is required for completion of the services, how much time is typically devoted to each subsequent visit?

14. When patients inquire for a low vision examination, where are they scheduled?

A. Directly into the Low Vision Clinic always.
B. Directly into the Low Vision Clinic if referred.
C. Initially into the general clinic for later referral to the Low Vision Clinic if necessary.
D. Other (please specify).

a. If patients are not scheduled directly into the Low Vision Clinic, what procedures are performed before they are referred to the Low Vision Clinic?

b. In what year might students be who perform these initial procedures?

A. 1st year
B. 2nd year
C. 3rd year
D. 4th year
E. Residents
F. These procedures are performed by non-students (please specify)

15. Are 1st year students exposed to low vision patients?

Yes No

If YES, 1) in what capacities?

A. Observer
B. Performing selected tests
C. Other

2) Do all 1st year students see low vision patients?

Yes No

If NO, how many do (include percentage of class) and how are the students selected?

16. Are 2nd year students exposed to low vision patients?

Yes No

If YES, 1) in what capacities?

A. Observer
B. Performing selected tests
C. Other

2) Do all 2nd year students see low vision patients?

Yes No

If NO, how many do (include percentage of class) and how are the students selected?

17. Are 3rd year students exposed to low vision patients?

Yes No

If YES, 1) in what capacities?

A. Observer
B. Performing selected tests
C. Other

2) Do all 3rd year students see low vision patients?

Yes No

If NO, how many do (include percentage of class) and how are the students selected?

18. Are 4th year students exposed to low vision patients?

Yes No

If YES, 1) in what capacities?

A. Observer
B. Performing selected tests
C. Performing the complete low vision exam
D. Other

2) Do all 4th year students see low vision patients?

Yes No

If NO, how many do (include percentage of class) and how are the students selected?

19 Are low vision patients examined in the Low Vision Clinic by low vision specialists without students present?

Yes No

a. If YES, please give the total number of patients seen exclusively by optometrists, and the total number of patients seen by students.

20. What is the mean number of low vision patients examined by a student in Low Vision Clinic before graduation?

21. What is the range of the number of low vision patients (high-low) examined by a student in Low Vision Clinic before graduation?

22. Are there sufficient numbers of low vision patients available to supply the low vision program as currently designed?

Yes No

a. If NO, what reasons do you know or suppose to be reasons for shortage in patient numbers?

23. Concerning the means of providing low vision clinical experience, which of the following is/are part of the program?

A. Low vision clinic on the college site
B. Low vision clinic(s) located away from the college but administered by the college #____
C. Low vision clinic administered by some other agency but with which the college is affiliated. #____
D. Other _____

24. The examination of low vision patients is
A. Optional for all students.
B. Required for all students before graduation.
C. Available only for a select group of students.
D. Described better as _____

a. If C is circled, 1) how is this group of students selected?

2) How many students per graduating class are in this group?

25. The observation of low vision examinations is
    A. Optional for all students.
    B. Required for all students before graduation.
    C. Available only for a select group of students.
    D. Described better as _____

    a. If C is circled, 1) how is this group of students selected?

    2) How many students per graduating class are in this group?

    3) Is this the same group of students who examine low vision patients (if D in the previous question was circled).

26. If students examine low vision patients, what best describes the procedure followed?
    A. One student examines a patient.
    B. A pair of students examine a patient with both students participating equally.
    C. A pair of students examine a patient with one student assuming major responsibliity for the patient.
    D. Other

27. What is the student/patient ratio as it exists in the clinic?

28. What is the student/instructor ratio?

29. What is the patient/instructor ratio?

Low Vision Examination

Respondent _____

Position _____

School _____

For the following questions concerning the low vision evaluation, please mark two answers for each item. First, circle for each testing item the letter from the following categories which most closely corresponds to the frequency of the item's use in the low vision clinic. Mark only one.

W. Routinely used in testing
X. Occasionally used in testing (when indicated)
Y. Rarely used in testing
Z. Not used in testing

Second, select for each testing item the letter from the following categories which corresponds to the individual who typically performs the item. (More than one may be marked). If E is marked, please specify the occupation of the person who performs the item.

A. Optometry student
B. Resident in rehabilitative optometry
C. O.D., but not a resident
D. Optometric technician or assistant
E. Other

1. Case History	W	X	Y	Z	A	B	C	D	E
2. Visual Acuity									
Distance									
a. Projected chart	W	X	Y	Z	A	B	C	D	E
b. Externally illum. card board chart	W	X	Y	Z	A	B	C	D	E
c. Internally illum. chart	W	X	Y	Z	A	B	C	D	E
d Snellen charts	W	X	Y	Z	A	B	C	D	E
e. LOGMAR charts	W	X	Y	Z	A	B	C	D	E
f. Variable chart illumination	W	X	Y	Z	A	B	C	D	E
g. Variable room illumination	W	X	Y	Z	A	B	C	D	E
h. Variable contrasts (incl. reverse) Please specify how _____	W	X	Y	Z	A	B	C	D	E
i. Variable spectral composition Please specify how _____	W	X	Y	Z	A	B	C	D	E
Near									
j. Single letter acuity	W	X	Y	Z	A	B	C	D	E
k. Word acuity	W	X	Y	Z	A	B	C	D	E
l. Sentence acuity/performance	W	X	Y	Z	A	B	C	D	E

m. Object card acuity (e.g. LH cards)	W	X	Y	Z	A	B	C	D	E
n. Object or toys	W	X	Y	Z	A	B	C	D	E
o. Reduced Snellen notation	W	X	Y	Z	A	B	C	D	E
p. Jaeger notation	W	X	Y	Z	A	B	C	D	E
q. Point type notation	W	X	Y	Z	A	B	C	D	E
r. M notation	W	X	Y	Z	A	B	C	D	E
s. Other notation _____	W	X	Y	Z	A	B	C	D	E
t. Variable chart illumination	W	X	Y	Z	A	B	C	D	E
u. Variable room illumination	W	X	Y	Z	A	B	C	D	E
v. Variable contrast (specify how) _____	W	X	Y	Z	A	B	C	D	E
w. Variable spectral composition (specify how) _____	W	X	Y	Z	A	B	C	D	E
x. Light meters to measure illumination	W	X	Y	Z	A	B	C	D	E
3. Visual Fields									
a. Central field testing (specify most common method) _____	W	X	Y	Z	A	B	C	D	E
b. Peripheral field testing (specify most common method) _____	W	X	Y	Z	A	B	C	D	E
c. Amsler grid	W	X	Y	Z	A	B	C	D	E
d. Confrontations	W	X	Y	Z	A	B	C	D	E
e. Harrington Flocks Screener	W	X	Y	Z	A	B	C	D	E
f. Friedman Visual Field Analyzer	W	X	Y	Z	A	B	C	D	E
4. External Examination	W	X	Y	Z	A	B	C	D	E
5. Biomicroscopy and related techniques	W	X	Y	Z	A	B	C	D	E
a. Gonioscopy, Hruby lens, etc.	W	X	Y	Z	A	B	C	D	E
6. Ophthalmoscopy									
a. Direct	W	X	Y	Z	A	B	C	D	E
b. Monocular indirect	W	X	Y	Z	A	B	C	D	E
c. Binocular indirect	W	X	Y	Z	A	B	C	D	E
7. Retinoscopy	W	X	Y	Z	A	B	C	D	E
8. Keratometry	W	X	Y	Z	A	B	C	D	E
9. Color Vision Testing									
a. Pseudo-isochromatic plates	W	X	Y	Z	A	B	C	D	E
b. Farnsworth D-15	W	X	Y	Z	A	B	C	D	E
c. Other _____	W	X	Y	Z	A	B	C	D	E
10. Distance Testing									
a. Phoropter testing	W	X	Y	Z	A	B	C	D	E

b. Trial frame testing W X Y Z A B C D E
c. Telescopic refinement of subjective W X Y Z A B C D E
d. Illumination evaluations W X Y Z A B C D E
e. Telescopic testing W X Y Z A B C D E
i) Hand-held monoculars/ binoculars W X Y Z A B C D E
ii) Stand-mounted monoculars/binoculars W X Y Z A B C D E
iii) Spectacle-mounted Galilean monoculars W X Y Z A B C D E
iv) Spectacle-mounted prism monoculars W X Y Z A B C D E
v) Spectacle mounted Galilean binoculars W X Y Z A B C D E
vi) Spectacle mounted prism terrestrial binoculars W X Y Z A B C D E
vii) Contact lens telescopes W X Y Z A B C D E

11. Intermediate Testing
a. Low power adds/trifocals W X Y Z A B C D E
b. Nearpoint telescopes W X Y Z A B C D E
c. Hand/stand magnifiers W X Y Z A B C D E

12. Near Testing
a. Phoropter testing W X Y Z A B C D E
b. Trial frame testing W X Y Z A B C D E
c. Near subjective W X Y Z A B C D E
d. Illumination testing W X Y Z A B C D E
e. Binocular testing W X Y Z A B C D E
If not routine, what criterion is used to determine when binocularity testing is warranted?
f. Spectacle Aids
i) High bifocal adds W X Y Z A B C D E
ii) Microscopic lenses W X Y Z A B C D E
iii) Fresnel lenses W X Y Z A B C D E
iv) Nearpoint telescopes W X Y Z A B C D E
v) Loupes W X Y Z A B C D E
vi) Clip-on loupes W X Y Z A B C D E
vii) Clip-on plus lenses W X Y Z A B C D E
g. Non spectacle magnifiers
i) Hand magnifiers W X Y Z A B C D E
ii) Pocket magnifiers W X Y Z A B C D E
iii) Stand mag W X Y Z A B C D E
iv) Concave mirrors W X Y Z A B C D E
v) CCTV W X Y Z A B C D E
vi) Slide projectors W X Y Z A B C D E
vii) Opaque projectors W X Y Z A B C D E

13. Illumination controls/assessory aids
a. Lighting techniques W X Y Z A B C D E
b. Typoscopes W X Y Z A B C D E
c. Writing guides W X Y Z A B C D E
d. Occluders W X Y Z A B C D E
e. Sunglasses, filters W X Y Z A B C D E
f. Visors, side shields W X Y Z A B C D E

g. Pinhole/multiple pinhole spectacles	W	X	Y	Z	A	B	C	D	E
h. Occluder contact lens	W	X	Y	Z	A	B	C	D	E
i. Contact lens to control aperture size/retinal illumination	W	X	Y	Z	A	B	C	D	E
j. Reading stands	W	X	Y	Z	A	B	C	D	E
14. Cosmetic Contact Lenses	W	X	Y	Z	A	B	C	D	E
15. Ocular Prosthetics	W	X	Y	Z	A	B	C	D	E
16. Electro Optical Image Intensifiers (e.g. night vision pocketscope)	W	X	Y	Z	A	B	C	D	E
17. Field Awareness/Expansion Devices	W	X	Y	Z	A	B	C	D	E
a. Hand held reverse telescopes	W	X	Y	Z	A	B	C	D	E
b. Spectacle-mounted reverse telescopes	W	X	Y	Z	A	B	C	D	E
c. Reverse telescopes contact lens systems	W	X	Y	Z	A	B	C	D	E
d. Mirror hemianopia spectacles	W	X	Y	Z	A	B	C	D	E
e. Partial prism spectacles	W	X	Y	Z	A	B	C	D	E
f. Minus lenses	W	X	Y	Z	A	B	C	D	E
18. Ordering and Dispensing									
a. Fitting/measuring for spectacle aids					A	B	C	D	E
b. Ordering spectacle aids					A	B	C	D	E
c. Ordering non-spectacle aids					A	B	C	D	E
d. Verification of aids									
i) By lensometer	W	X	Y	Z	A	B	C	D	E
ii) By optical bench methods	W	X	Y	Z	A	B	C	D	E
iii) By looking at size/ shape of device	W	X	Y	Z	A	B	C	D	E
iv) Other	W	X	Y	Z	A	B	C	D	E
e. Dispensing aids									
i) Fitting frame to face	W	X	Y	Z	A	B	C	D	E
ii) Visual acuity/ performance with aid	W	X	Y	Z	A	B	C	D	E
iii) Care of aid	W	X	Y	Z	A	B	C	D	E
19. Training in use of aids									
a. Training prior to final prescription	W	X	Y	Z	A	B	C	D	E
i) Use of lesser magnification first	W	X	Y	Z					
ii) Use of loaner aids	W	X	Y	Z					
If loaners are used, is a loaning fee charged?	Yes		No						

b. Training at dispensing W X Y Z A B C D E

c. Training following dispensing regularly scheduled W X Y Z A B C D E

i) Training sessions held for patients with particular types of aids W X Y Z A B C D E

If regular visits are held, please describe frequency and nature.

ii) Are training sessions following dispensing provided typically only to patients who are found to have difficulty adjusting to the aids?

Yes No

iii) How are patients having difficulty discovered? (e.g. patient-initiated contact, clinical-initiated follow-up, etc).

d. Training in scanning eye movements W X Y Z A B C D E

e. Training in eccentric viewing W X Y Z A B C D E

f. Other training- Please describe

20. Special Testing

a. Contrast sensitivity W X Y Z A B C D E
b. Spectral sensitivity W X Y Z A B C D E
c. ERG W X Y Z A B C D E
d. EOG W X Y Z A B C D E
e. VER W X Y Z A B C D E
f. Fluorescein angiography W X Y Z A B C D E
g. Dark adaptation W X Y Z A B C D E
h. Light adaptation W X Y Z A B C D E
i. Other W X Y Z A B C D E

21. Preschool Patients

a. Are children younger than 5 years old (preschool) examined in the low vision clinic?

Yes No

i) If NO, please describe how these children are provided for.

ii) If YES, please answer the following questions.

a. Which of the following prodedures are performed?

A. Visual acuities
B. Visual fields
C. Refraction
D. Accommodative testing
E. Vergence testing
F. Ophthalmoscopy
G. Other (please list)

b) Are low vision aids (other than lenses to correct ametropia) prescribed for these children?

Yes No

If YES, please list types of aids which may be prescribed.

c) What, if any, types of counselling are offered to the parents of these children (e.g. genetics, educational possibilities, prognosis).

d. Do optometry students examine these children?

Yes No

If YES, how are the students selected to examine this age group?

e) Do residents in R.O. examine patients in this age category?

Yes No

If NO, please indicate reasons why they do not.

77

f) Is any training in the use of residual vision offered by the Low Vision Clinic for these children?

Yes No

If YES, please describe.

22. Personnel

In this section the availability and utilization of groups other than O.D.'s in low vision care is explored. First of all, indicate the availability of each professional group listed below using one of the descriptions F-M for each of the four patient age groups.

F. Present only when the clinic is open.
G. Present whenever the clinic is open and at other times.
H. Present regularly at some but not all times the Low Vision Clinic is open.
I. Available on an "on call" basis when the need arises.
J. Available for patient referral - close working association with Low Vision Clinic.
K. Available for patient referral - very little to no working relationship with Clinic.
L. None known to be accessible for referral - Referral would be made otherwise.
M. Referral to this group not deemed necessary.

Secondly, indicate with letters W-Z, the frequency with which each group is utilized by the clinic.

W. Routinely a participant in low vision patient care.
X. Occasionally a participant in low vision patient care.
Y. Rarely a participant in low vision patient care.
Z. Never a participant in low vision patient care.

Thirdly, when a specific professional group is involved in the care of a low vision patient from your clinic, they may assume various roles in the health care team. For each professional group, indicate which of the following roles they fulfill.

Q. Always the leader/coordinator of a low vision care team for patients with whom this group is involved.
R. Always an ancillary service to a care program coordinated by some other profession.
S. Sometimes the coordinator of a team of interdisciplinary professionals, sometimes only a member of the team involved in low vision patient care.
*When this category (S) is used, please describe how a coordinator becomes designated as such.
T. No formal team approach used.

1) Ophthalmologists

a. Low vision specialist

i) Ages 0-5 (Preschool) F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 (School yrs) F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 (Active Adulthood) F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Do these professionals interact with optometry students? Yes No

Do these professionals interact with residents? Yes No

b. Non-low vision specialists

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students? Yes No

Interact with residents? Yes No

2) Orientation and mobility instructor

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students? Yes No

Interact with residents? Yes No

3) Low vision optometric technician or assistant

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students? Yes No

Interact with residents? Yes No

4) Rehabilitation counselors

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students? Yes No

Interact with residents? Yes No

79

5) Social agency workers

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students?

Yes No

Interact with residents?

Yes No

6) Psychological counselors

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students?

Yes No

Interact with residents?

Yes No

7) Educators

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students?

Yes No

Interact with residents?

Yes No

8) Others (please specify)

i) Ages 0-5 F G H I J K L M W X Y Z Q R S T

ii) Ages 6-18 F G H I J K L M W X Y Z Q R S T

iii) Ages 19-55 F G H I J K L M W X Y Z Q R S T

iv) Ages 56 + older F G H I J K L M W X Y Z Q R S T

v) Interact with optometry students?

Yes No

Interact with residents?

Yes No

60.

Residency in Rehabilitative Optometry

Respondent _____

Position _____

School _____

Date Residency Established _____ Date of Initial Accreditation _____

By _____

1. What are the objectives of the residency program in rehabilitative optometry?

2. How do the objectives of the residency differ from the objectives of the optometry program relative to the knowledge, skills, experience in rehabilitative optometry?

3. By what process are candidates selected for the residency?

4. What qualifications, qualities, attitudes, etc. are required for selection to the residency?

5. What is the number of students admitted to the residency each year?

6. What is the total number of students enrolled in the residency program at any particular time?

7. What is the mean number of weeks required for completion of the residency program?

8. How many students have completed the residency program?

9. What does the student who successfully completes the program receive (e.g., degree, diploma)?

10. What positions and responsibilities have graduates of the residency program undertaken?

11. How many credit hours or equivalent are required for completion of the residency?

12. Please list the required courses and credit hours or equivalent for each.

13. Please list the courses, if any, from other schools/departments which residents may take as part of the a) required curriculum; b) elective curriculum?

14. What is the position in the residency program of research in rehabilitative optometry?

    A. Required
    B. Optional
    C. Not available as part of the program.

15. What steps, if any, are taken to encourage research in rehabilitative optometry during or after the residency?

16. How many hours per week, on the average, does a resident spend <u>as a student</u>

    a. in lecture _____
    b. in seminar _____
    c. in laboratory _____
    d. in clinic _____
    e. other (please specify)
    _____

17. Do the residents have teaching responsibilities? Yes No

    a. If YES, what types of courses/labs do they teach?

    b. How much time per week do they spend teaching?

18. Is financial assistance available to residents? Yes No

    If YES, please describe types and amounts.

19. What is the estimated cost to the school of the residency program per resident (e.g. budgeted amounts)?

APPENDIX E

Low Vision Clinical Procedures, Personnel

APPENDIX E

Low Vision Clinic Procedures, Personnel

Number of schools surveyed which include the following procedures in the low vision examination. There are two areas of response.

The first response concerns the frequency with which an item is used:

W. Routinely used in testing
X. Occasionally used in testing (when indicated)
Y. Rarely used in testing
Z. Not used in testing

The second response concerns the individual(s) who typically perform the item:

A. Optometry student
B. Resident in rehabilitative optometry
C. O.D., but not a resident
D. Optometric technician or assistant
E. Social worker
F. Training specialist (special education)
G. Educator
H. Mobility instructor

		W	X	Y	Z	A	B	C	Other
1.	Case History	9				8	3	4	E-3
2.	Visual Acuity								
	Distance								
	a. Projected chart	2	2	4	1	8	2	2	
	b. Externally illum. cardboard chart	8	1			9	3	2	D-1
	c. Internally illum. chart			2	7	2		1	
	d. Snellen chart	6	2		1	8	3	2	D-1
	e. LOGMAR charts	1	1	1	6	3	1		
	f. Variable chart illumination	6	2	1		9	3	1	D-1
	g. Variable room illumination	6	2	1		9	3	2	D-1
	h. Variable contrasts (incl. reverse)		2	3	4	5	2	0	D-1, F-1
	i. Variable spectral composition				9				
	Near								
	j. Single letter acuity	7	1	1		9	3	2	
	k. Word acuity	8	1			9	3	2	G-1
	l. Sentence acuity/performance	6	3			7	3	2	G-1
	m. Object card acuity (e.g. LH cards)	1	6	1	1	8	3	1	
	n. Objects or toys		6	2	1	8	3	1	D-1, H-1
	o. Reduced Snellen notation	1	3	4	1	8	2	2	
	p. Jaeger notation		2	3	4	6	1	2	
	q. Point type notation	5	2	1	1	8	2	2	
	r. M notation	7		2		9	3	2	
	s. Other notation								

		W	X	Y	Z	A	B	C	Other
t.	Variable chart illumination	8			1	8	3	2	
u.	Variable room illumination	5	2	1	1	9	3	2	
v.	Variable contrast (specify how) CCTV 4, color, filters 1 different reading materials	2	4		3	5	1	1	F-1, G-1, H-1
w.	Variable spectral composition	0	0	0	9				
x.	Light meters to measure illum.		2	3	4	4	3	1	G-1
3.	Visual Fields								
a.	Central field testing	7	1	1		9	3	2	
b.	Peripheral field testing	3	6			9	3	2	
c.	Amsler Grid	4	5			9	3	2	
d.	Confrontations	2	4	2	1	8	3	1	
e.	Harrington Flocks Screener		1	1	7	2	1		
f.	Friedman Visual Field Analyzer			1	8	1	1		
4.	External Examination	9				9	4	4	
5.	Biomicroscopy and related techniques	7	1	1		9	4	3	
a.	Gonioscopy, Hruby lens, etc.	1	1	1		2	1	1	
6.	Ophthalmoscopy								
a.	Direct	9				9	4	4	
b.	Monocular indirect	1	5	3		8	3	3	
c.	Binocular indirect	3	3	3		8	3	4	
7.	Retinoscopy	9				9	3	2	
8.	Keratometry	3	6			9	3	2	
9.	Color Vision Testing								
a.	Pseudo-isochromatic plates		4	4	1	8	3	1	
b.	Farnsworth D-15		5	2	2	7	3	1	
c.	Other (Anomaloscope, 100-Hue)		1	1	3	2	1		
10.	Distance Testing								
a.	Phoropter testing	1	2	3	3	6	2	1	
b.	Trial frame testing	9				9	3	3	
c.	Telescopic refinement of subjective	3	2	3	1	8	2	2	
d.	Illumination evaluations	3	4	2		9	3	2	G-1, H-1
e.	Telescopic testing	3	2			5	1	2	
i)	Hand-held monoculars/ binoculars	9				9	3	2	H-1
ii)	Stand-mounted monocular/ binoculars	2		3	4	5	1		H-1
iii)	Spectacle-mounted Galilean monoculars	6	3			9	3	3	H-1
iv)	Spectacle-mounted prism monoculars	2	4	1	1	8	3	1	H-1

		W	X	Y	Z	A	B	C	Other
v)	Spectacle mounted Galilean binoculars	1	6	2		9	3	2	H-1
vi)	Spectacle-mounted prism (terrestrial binoculars)	1	4	3	1	7	3	1	H-1
vii)	Contact lens telescopes		1	2	6	4	1	2	
11.	Intermediate Testing								
a.	Low power adds/trifocals	4	4	1		8	3	2	G-1
b.	Nearpoint telescopes	2	7			9	3	3	G-1
c.	Hand/stand magnifiers	8	1			9	3	2	
12.	Near Testing								
a.	Phoropter testing			3	6	3	1	1	
b.	Trial frame testing	9				9	3	3	
c.	Near subjective	6	3			9	3	2	
d.	Illumination testing	6	2		1	9	3	2	G-1
e.	Binocular testing	4	5			9	3	3	
	If not routine, what criterion is used to determine when binocularity testing is warranted?								
	Similarity of visual acuities O.D., O.S.					4			
	Cover test					1			
f.	Spectacle Aids								
i)	High bifocal adds	7	1	1		9	3	2	
ii)	Microscopic lenses	6	3			9	3	3	
iii)	Fresnel lenses	2	5	1	1	8	3	2	
iv)	Nearpoint telescopes	2	7			9	3	3	
v)	Loupes	3	5	1		9	3	3	
vi)	Clip-on loupes	2	6	1		9	3	2	
vii)	Clip-on plus lenses	2	6	1		9	3	2	
g.	Non Spectacle Magnifiers								
i)	Hand magnifiers	9				9	3	2	
ii)	Pocket magnifiers	7	2			9	3	2	
iii)	Stand magnifiers	8	1			9	3	2	
iv)	Concave mirrors			4	5	4	2		
v)	CCTV	1	7	1		7	3	3	G-1
vi)	Slide projectors			3	6	3		1	
vii)	Opaque projectors			2	7	2		1	
13.	Illumination Controls/Accessory Aids								
a.	Lighting techniques	8	1			9	3	3	G-1
b.	Typoscopes	7	2			8	3	3	G-1
c.	Writing guides	3	5		1	7	3	2	G-1
d.	Occluders	6	3			9	3	3	G-1
e.	Sunglasses, filters	6	3			8	3	3	
f.	Visors, side shields	1	6	2		8	3	3	
g.	Pinhole/multiple pinhole spectacles	2	1	5	1	8	3	3	
h.	Occluder contact lenses			5	4	3	3	1	
i.	Contact lens to control aperture size/retinal illumination		1	6	2	5	4	2	
j.	Reading stands		2	2		2	1	1	

		W	X	Y	Z	A	B	C	Other
14.	Cosmetic Contact Lenses		1	3	6	4	2	1	
15.	Ocular Prosthetics			2	7	1			
16.	Electro Optical Image Intensifiers (e.g. night vision pocketscope)				9				
17.	Field Awareness/Expansion Devices	2	4	1	1	6	3	4	
	a. Hand held reverse telescopes	3	3	3		8	4	5	H-1
	b. Spectacle-mounted reverse telescopes	1	3	4	2	7	4	4	H-1
	c. Reverse telescopes contact lens systems		1		8	1	1	1	
	d. Mirror hemianopia spectacles	1		2	6	3	2	1	
	e. Partial Prism spectacles	2	3	4		8	4	5	H-1
	f. Minus lenses		2	4	3	6	4	3	
18.	Ordering and Dispensing								
	a. Fitting/measuring for for spectacles aids					8	3	6	D-1
	b. Ordering spectacle aids					6	2	7	D-4
	c. Ordering non-spectacle aids					4	2	4	D-4, G-1 H-1
	d. Verification of aids								
	i) By lensometer	9				7	2	3	D-3
	ii) By optical bench methods			2	7	3	1		
	iii) By looking at size/shape of device	5	2		2	4	3	5	D-2
	iv) Other (Page-lens distance)	1	1			1	1	2	
	e. Dispensing aids								
	i) Fitting frame to face	7	1			6	1	5	D-3
	ii) Visual acuity/performance with aid	9				9	3	4	D-1, F-1
	iii) Care of aids	9				8	2	4	D-2, G-1, H-1
19.	Training in use of aids	4				1	1	1	D-1, F-1
	a. Training prior to final prescription	5	1	1		5	1	3	D-1, G-1, H-1
	i) Use of lesser magnification first	1	6	2					
	ii) Use of loaner aids	7	2						
	Loaning fee charged?	Yes -1 No -8							
	b. Training at dispensing	6	3			8	3	3	D-1, G-1, H-1
	c. Training following dispensing regularly scheduled	2	4		3	4	2	2	F-1
	i) Training sessions held for patients with particular types of aids	3	1	1	2	3	1	2	D-1, F-1

		W	X	Y	Z	A	B	C	Other

ii) Are training sessions following dispensing provided typically only to patients who are found to have difficulty adjusting to the aid? Yes - 6 No - 2

iii) How are patients having difficulty discovered?
Followup visit - 3
Telephone followup - 3 (1-4 weeks)
At dispensing - 1

d.	Training in scanning eye movements	1	3	2	3	2	1	2	F-1, H-1,
e.	Training in eccentric viewing	2	4	2	1	3	3	3	F-1, H-1,
f.	Other training (C.L. handling)	1							

20. Special testing

a.	Contrast sensitivity	1	1	7	1		2	O.D. not in LV Clinic
b.	Spectral sensitivity			9				
c.	ERG	2	5	2	2	1	4	D-1; Non-LV O.D.-2
d.	EOG	2	3	4	2	1	3	D-1; Non-LV O.D.-2
e.	VER	2	5	2	2	1	4	D-1; Non-LV O.D.-2
f.	Fluorescein angiography			9				
g.	Dark adaptation	2	2	5	1	1	3	D-1, Non-LV O.D.-2
h.	Light adaptation	1	3	5			4	Non-LV O.D.-2
i.	Ultrasonography		1				1	

21. Preschool patients

a. Are children younger than 5 years old (preschool) examined in the low vision clinic? Yes - 9 No - 0

1) Which of the following procedures are performed?

a.	Visual acuities	9
b.	Visual fields	7
c.	Refraction	7
d.	Accommodative testing	5
e.	Vergence testing	3
f.	Ophthalmoscopy	9
g.	Binocularity testing	2
h.	Retinoscopy	2
i.	Mobility evaluation	1

2) Are low vision aids prescribed for these children? Yes - 9 No - 0

List types of aids which may be prescribed.
Hand-held telescopes -7
Illumination control devices (sunglasses, etc) -2

Stand, hand magnifiers -3
Bifocal -3
CCTV -2
Microscopes -1

3) What types of counselling are offered to the parents of these children:
Educational possibilities -6
Description of vision, prognosis -5
Use of aid -2
Genetics -3
None 1

4) Do optometry students examine these patients? Yes - 4 No - 1

If yes, how are the students selected?
Fourth year students with superior skills -3
Volunteer -1
Regularly assigned students -3
Low vision interns in optometry program 1

5) Do residents examine patients in this age category?
Yes - 2 No -6

If not, why not?
Small number of patients - staff O.D. examines while student and residents observe - 1
Geriatric population at clinics staffed by resident - 2

6) Is any training in the use of residual vision offered by the low vision clinic for these children?
Yes -5 No -4

If yes, please describe.
Referral to visual training for monocular stimulation -2
Reading, fixation, tracking, perception -1
Mobility instructor trained in vision stimulation -1
Home training under parent's guidance -1

22. Personnel

In this section the availability and utilization of other groups involved in low vision care is explored. First of all, indicate the availability of each professional group listed below using one of the discriptions F-M for each of the four patient age groups.

F. Present whenever the clinic is open.
G. Present whenever the clinic is open and at other times.
H. Present regularly at some but not all times when the Low Vision Clinic is open.
I. Available on an "on-call" basis when the need arises.
J. Available for patient referral - close working association with Low Vision Clinic.

K. Available for patient referral - very little to no working relationship with Clinic.
L. None known to be accessible for referral-referral would be made otherwise.
M. Referral to this group not deemed necessary.

Secondly, indicate with letters W-Z, the frequency with which each group is utilized by the clinic.

W. Routinely a participant in low vision patient care.
X. Occasionally a participant in low vision patient care.
Y. Rarely a participant in low vision patient care.
Z. Never a participant in low vision patient care.

Thirdly, when a specific professional group is involved in the care of a low vision patient from your clinic, they may assume various roles in the health care team. For each professional group, indicate which of the following roles they fulfill.

Q. Always the leader/coordinator of a low vision care team for patients with whom this group is involved.
R. Always ancillary service to a care program coordinated by some other profession.
S. Sometimes the coordinator of a team of interdisciplinary professionals, sometimes only a number of the team involved in low vision patient care.

* When this category is used, please describe how a coordinator becomes designated as such.

T. No formal team approach.

Number of schools responding is each category is summarized below for each service group.

1) Ophthalmologists
   a. Low vision specialists
      i) Ages 0-5 (Preschool)
         F G H I2 J1 K L3 M4 W X Y2 Z5 Q0 R0 S T9
      ii) Ages 6-18 (School years)
         F G H I1 J1 K L3 M4 W X Y1 Z5 Q0 R0 S T9
      iii) Ages 19-55 (Active adulthood)
         F G H I1 J1 K L3 M4 W X Y1 Z5 Q0 R0 S T9
      iv) Ages 56 + older
         F G H I1 J1 K L3 M4 W X Y1 Z5 Q0 R0 S T9
      v) Do these professionals interact with optometry students?
         Yes -1 No -6

         Do these professionals interact with residents?
         Yes - 1 No -6

   b. Non-low vision specialists
      i) Ages 0-5 (Preschool)
         F G H2 I1 J3 K4 L M W X5 Y2 Z1 Q R4 S T5
      ii) Ages 6-18 (School years)
         F G H2 I1 J3 K4 L M W X5 Y2 Z1 Q R4 S T5

iii) Ages 19-55 (Active adulthood)
F G H2 I1 J3 K4 L M W X5 Y2 Z1 Q R4 S T5

iv) Ages 56 + older
F G H2 I1 J3 K4 L M W X5 Y2 Z1 Q R4 S T5

v) Interact with optometry students?
Yes -9 No -0

vi) Interact with residents?
Yes -5 No -3

2) Orientation and mobility instructors

i) Ages 0-5 (Preschool)
F G2 H I J1 K6 L M W2 X4 Y2 Z1 Q R3 S1 T5

ii) Ages 6-18 (School years)
F G2 H I J1 K6 L M W2 X4 Y2 Z1 Q1 R3 S T5

iii) Ages 19-55 (Active adulthood)
F G2 H I J1 K6 L M W2 X4 Y2 Z1 Q1 R3 S T5

iv) Ages 56 + older
F G2 H I J1 K5 L M W2 X4 Y1 Z1 Q1 R3 S T5

v) Interact with optometry students?
Yes -3 No -4

vi) Interact with residents?
Yes -2 No -4

3) Low vision optometric technician or assistant

i) Ages 0-5 (Preschool)
F1 G1 H1 I J K L1 M4 W1 X2 Y Z4 Q R S T9

ii) Ages 6-18 (School years)
F1 G1 H1 I J K L1 M4 W1 X2 Y Z4 Q R S T9

iii) Ages 19-55 (Active adulthood)
F1 G1 H1 I J K L1 M4 W1 X2 Y Z4 Q R S T9

iv) Ages 56 + older
F1 G1 H1 I J K L1 M4 W1 X2 Y Z4 Q R S T9

v) Interact with optometry students?
Yes -4 No -3

vi) Interact with residents?
Yes -3 No -3

4) Rehabilitation counselors

i) Ages 0-5 (Preschool)
F1 G H I1 J5 K L2 M W2 X4 Y Z1 Q R3 S T6

ii) Ages 6-18 (School years)
F1 G H I1 J6 K1 L M W2 X5 Y1 Z1 Q R4 S T5

iii) Ages 19-55 (Active adulthood)
F1 G H I1 J6 K1 L M W2 X5 Y1 Z1 Q R4 S T5

iv) Ages 56 + older
F1 G H I1 J6 K L1 M W2 X5 Y Z1 Q R4 S T

v) Interact with optometry students?
Yes -4 No -5

vi) Interact with residents?
Yes -3 No -5

5) Social agency workers

i) Ages 0-5 (Preschool)
F G3 H I J2 K3 L M W2 X3 Y1 Z3 Q1 R2 S T6

ii) Ages 6-18 (School years)
F G3 H I1 J2 K3 L M W2 X4 Y1 Z2 Q1 R3 S T5

iii) Ages 19-55 (Active adulthood)
F G3 H I1 J2 K3 L M W2 X4 Y1 Z2 Q1 R3 S T5

iv) Ages 56 + older
F G3 H I1 J2 K3 L M W2 X4 Y1 Z2 Q1 R3 S T5

v) Interact with optometry students?
Yes -4 No -4

vi) Interact with residents?
Yes -4 No -3

6) Psychological counselors

i) Ages 0-5 (Preschool)
F G H I1 J K4 L3 M1 W1 X1 Y4 Z2 Q R3 S T6

ii) Ages 6-18 (School years)
F G H I2 J K4 L2 M1 W1 X1 Y5 Z1 Q R3 S T6

iii) Ages 19-55 (Active adulthood)
F G H I1 J K4 L3 M1 W1 X1 Y4 Z2 Q R3 S T6

iv) Ages 56 + older
F G H I1 J K4 L3 M1 W1 X1 Y4 Z2 Q R3 S T6

v) Interact with optometry students?
Yes -2 No -5

vi) Interact with residents?
Yes -1 No -5

7) Educators

i) Ages 0-5 (Preschool)
F G1 H1 I1 J K2 L3 M1 W1 X3 Y2 Z2 Q R4 S T5

ii) Ages 6-18 (School years)
F G1 H1 I1 J K2 L3 M1 W1 X3 Y2 Z2 Q R4 S T5

iii) Ages 19-55 (Active adulthood)
F G1 H1 I1 J K2 L3 M1 W1 X3 Y2 Z2 Q R4 S T5

iv) Ages 56 + older
F G1 H1 I1 J K2 L3 M1 W1 X3 Y2 Z2 Q R4 S T5

v) Interact with optometry students?
Yes

(Written in)
Training Specialist - (responses were same for all patient age groups) (B.S. in Spec. Ed.)
F1 G H I J K L M W1 X Y Z Q R S T1

b. Geneticist - Same responses for all patient age groups)
F G H1 I J K L M W X1 Y Z Q R1 S T

APPENDIX F

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